Prepared for:

Base Realignment and Closure
Program Management Office West
1455 Frazee Road, Suite 900
San Diego, California 92108-4310

NAVFAC Naval Facilities Engineering Command

Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, California 92132-5190

Final

Monthly Landfill Gas Monitoring Report For January 2006 Post-Removal Action

Parcel E-2, Industrial Landfill
Hunters Point Shipyard
San Francisco, California

Contract No. N68711-02-D-8213
Delivery Order CTO 0013
Document Control No. 02.125.15.0070

Prepared by:

Innovative Technical Solutions, Inc.

April 17, 2006

Contract Number N68711-02-D-8213
ITSI Task Order CTO-0013

Final

MONTHLY LANDFILL GAS MONITORING REPORT FOR JANUARY 2006 POST-REMOVAL ACTION

Parcel E-2, Industrial Landfill
Hunters Point Shipyard, San Francisco, California

April 17, 2006

Prepared for:

Base Realignment and Closure
Program Management Office West
1455 Frazee Road, Suite 900
San Diego, California 92108

NAVFAC
Naval Facilities Engineering Command

DEPARTMENT OF THE NAVY
Patrick Brooks, R.G., Lead Remedial Project Manager
Southwest Division
Naval Facilities Engineering Command
San Diego, California

Prepared by:

ITSI Innovative Technical Solutions, Inc.

INNOVATIVE TECHNICAL SOLUTIONS, INC.
1485 Bayshore Boulevard, Suite 355
San Francisco, California 94124
(415) 657-0346

Jim Schollard, Project Manager

RESPONSE TO COMMENTS
DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR JANUARY 2006 POST-REMOVAL ACTION, PARCEL E-2, INDUSTRIAL LANDFILL, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA
APRIL 17, 2006

COMMENTS FROM:	RESPONSES FROM:
M. Work (EPA) Comments dated 22 March 2006	Navy
GENERAL COMMENTS	**RESPONSES TO GENERAL COMMENTS**
General Comment 1: Table, Page 6: Although the table indicates that there were zero hours of extraction at PV-02 the week of January 23, 2006, the note also indicates that both extraction units were in use at GMP01A and GMP07A. As a result, the total hours during which extraction occurred from all points are not specified; total extraction time should be captured either in the table or in the text. Please report the total extraction time in this table and revise the text to state that the table includes total extraction time. Please also include total extraction time in future reports.	**Response to General Comment 1:** *The table on Page 6 has been revised to include total extraction hours from GMP01A and GMP07A, and also lists total extraction hours from all locations.*
General Comment 2: Section 3.1.1, Fence Line, Pages 8 and 9: It is unclear whether all of the gas monitoring probes (GMPs) were rechecked after the GEM-2000 was re-calibrated and after the second GEM-2000 was obtained because all of the measurements were not provided. It would be helpful to have a table summarizing all of the methane measurements made with the two instruments and the times at which the methane measurements were made. Also, since the methane concentrations were rising in GMP01A and GMP07A over the course of the day, it is possible that the methane concentrations in other fence line GMPs also rose, but it is unclear if methane concentrations were re-measured in the other GMPs. Please revise the text to clarify whether the methane concentrations were re-measured in all of the GMPs and include a table summarizing all of the methane measurements and measurement times. If methane concentrations were not re-measured in all of the fence-line and UCSF GMPs, please explain why this was not done. Also, if a similar event occurs in the future, please re-measure methane concentrations in all of the fence line and UCSF GMPs.	**Response to General Comment 2:** *Section 3.1.1 includes the following text (new text in brackets):* "Following the completion of the [monitoring] round, the GEM-2000 was re-calibrated and the [two] GMPs in question were re-monitored [the same day to ensure the validity of the previous readings]. At this time, methane was detected in GMP01A at 25.5 % by volume and in GMP07A at 32.0% by volume. [As there were no methane detections at any other GMP above the HPS action level specified in Figure 19 of the Monitoring and Control Plan (MCP) (Tetra Tech EM Inc., 2004c), and since the accuracy of the GEM-2000 instrument was confirmed, no other GMPs were re-monitored]. The GEM-2000 was then re-calibrated [again] to ensure proper function, and again the meter was performing within 5% of the standard. To ensure the accuracy of the readings, a second, pre-calibrated GEM-2000 was procured. When the two GMPs were sampled with the second unit, methane was detected in GMP01A at 25.1% by volume and in GMP07A at 34.6% by volume (see Table 3a for all response data)." As a precaution, the Navy measured the methane concentrations

RESPONSE TO COMMENTS
DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR JANUARY 2006 POST-REMOVAL ACTION, PARCEL E-2, INDUSTRIAL LANDFILL, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA
APRIL 17, 2006

COMMENTS FROM: M. Work (EPA) Comments dated 22 March 2006	**RESPONSES FROM:** Navy
concentrations in all of the fence line and UCSF GMPs.	at GMP 23 and 24 as the probes have had elevated methane concentrations (> 1%) in the past. The Navy did not re-measure all fenceline and UCSF GMPs because that is not the procedure outlined in the MCP, Figure 19. The regulatory agencies are notified promptly if there is an exceedance of regulatory criteria of 5% methane by volume. In the future, the Navy will consider monitoring other gas probes, if requested by the US EPA on a case-specific basis. *Table 3a originally contained all data collected during the month of January, including dates and times; however, designations have been added to demarcate readings collected by the re-calibrated GEM-2000 and the rental GEM-2000 on January 23. .*

RESPONSE TO COMMENTS
DRAFT MONTHLY LANDFILL GAS MONITORING REPORT FOR JANUARY 2006 POST-REMOVAL ACTION, PARCEL E-2, INDUSTRIAL LANDFILL, HUNTERS POINT SHIPYARD, SAN FRANCISCO, CALIFORNIA
APRIL 17, 2006

COMMENTS FROM:	RESPONSES FROM:
T. Lanphar (DTSC) Comments dated 09 March 2006	Navy
GENERAL COMMENTS	**RESPONSES TO GENERAL COMMENTS**
General Comment 1: Please describe any changes in monitoring protocols as a result of this event. For example, the letter sent to CIWMB on February 3, 2006 states that the Navy will continue monitoring on a weekly basis for the near future. Please describe the criteria or protocol the Navy will use to determine when a return to the normal monitoring schedule is appropriate.	**Response to General Comment 1:** The normal monitoring protocol for the landfill gas calls for monthly monitoring (normally around the week of the BCT meetings). However, more-frequent monitoring and active gas extraction was needed in order to mitigate the methane exceedances of the 5% regulatory limit at these two GMPs at the property boundary. To verify that methane was being controlled, the Navy chose to conduct weekly monitoring as a precautionary measure. Discretionary monitoring is discussed in Figure 19 of the Final Interim Landfill Gas Monitoring and Control Plan (Tetra Tech, 2004). After methane has been below 1% for two consecutive days, the large box in the center of the Figure 19 specifies: "At the Navy's discretion, turn off extraction unit at interceptor vent trench. Operate vent extraction system intermittently and evaluate extraction frequency and duration for optimum gas control." Discretionary monitoring will continue until power is restored and when gas extraction can be maintained on a regular basis.

CONTENTS

LIST of TABLES

LIST of FIGURES

LIST of APPENDICES

ACRONYMS and ABBREVIATIONS

§	Section
27 CCR	Title 27 of the California Code of Regulations
BAAQMD	Bay Area Air Quality Management District
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cfm	cubic feet per minute
CIWMB	California Integrated Waste Management Board
GMP	gas monitoring probe
HPS	Hunters Point Shipyard
IR-01/21	Installation Restoration Site 01/21
ITSI	Innovative Technical Solutions, Inc.
KW	kilowatt
LEL	lower explosive limit
MCP	Monitoring and Control Plan
msl	mean sea level
Navy	U.S. Department of the Navy
NMOC	non-methane organic compound
PID	photoionization detector
ppmv	parts per million by volume
PV	passive vent
TCRA	time-critical removal action
Tetra Tech	Tetra Tech EM Inc.
UCSF	University of California, San Francisco

1 INTRODUCTION

Innovative Technical Solutions, Inc. (ITSI) received Task Order CTO-0013 from the U.S. Department of the Navy (Navy), Base Realignment and Closure Program Management Office West, under Contract Number N68711-02-D-8213, to provide technical support at Hunters Point Shipyard (HPS) in San Francisco, California. Under CTO-0013, ITSI is monitoring and controlling migration of landfill gas at the Industrial Landfill in Installation Restoration Site 01/21 (IR-01/21) within Parcel E-2 at HPS (Figure 1). All monitoring is being conducted using the requirements of Title 27 of the California Code of Regulations (27 CCR), Section (§) 20921(a)(2) as guidance. This report contains the results of landfill gas monitoring conducted in January and early February 2006, both for the January 2006 monitoring event and in response to detections above action levels during the monthly monitoring.

Recent investigations at the landfill, the purpose and scope of the monthly monitoring investigation, and the organization of this report are discussed below. Additional information about the site background prior to 2002 is presented in the Final Monthly Landfill Gas Monitoring Report for January 2004 submitted by Tetra Tech EM Inc. (2004a).

1.1 RECENT INVESTIGATIONS AT THE LANDFILL

In 2002, the Navy conducted an evaluation to characterize and delineate landfill gas at the Industrial Landfill as part of the nonstandard data gaps investigation at Parcel E (Tetra Tech EM Inc., 2003). Field personnel surveyed ambient air and soil gas and installed gas monitoring probes (GMPs) that were monitored on a weekly and quarterly basis. Figure 2 shows the locations, including GMPs, extraction wells, and passive vents (PVs), where landfill gas was monitored. The results of monitoring indicated that methane, the main component of landfill gas, was present at levels above the lower explosive limit (LEL; 5 percent by volume in air) at the following locations:

- Subsurface areas in the northern portion of the landfill;
- Above ground in ambient air at four areas within the University of California, San Francisco (UCSF) property (herein referred to as "the UCSF compound").

Additionally, trace amounts of methane and non-methane organic compounds (NMOCs) were detected in the crawlspace of Building 830 on the UCSF compound. The concentrations of NMOCs detected were well below action levels, and did not pose a threat to human health (Tetra Tech EM Inc., 2003). Methane was not detected at GMPs along Crisp Avenue, indicating that landfill gas had not migrated northward beyond the UCSF compound to Crisp Avenue or non-Navy property.

From summer 2002 through May 2003, the Navy conducted a time-critical removal action (TCRA) to address the levels of methane above the LEL on the UCSF compound. The goals of the TCRA were (1) to reduce levels of methane within the UCSF compound to below the LEL of 5 percent, in accordance with the requirements at 27 CCR §20921(a)(2), and (2) to

prevent future migration of landfill gas to the UCSF compound. A landfill gas control system, which may be operated passively or actively, was installed to achieve the goals of the TCRA. The Draft Landfill Gas Time-Critical Removal Action Closeout Report (Tetra Tech EM Inc., 2004b) describes these activities in more detail.

From May through November 2003, the Navy continued monitoring at the PVs (PV-01 through PV-04; PV-05 was installed after November 2003) and GMPs (GMP01A through GMP12, GMP20, and GMP21) along the fence immediately north of the landfill. The draft TCRA closeout report contains a detailed summary of monitoring results, potential migration pathways for landfill gas, and the response actions taken to address the gas migration scenarios, including installation of a grout curtain in selected areas (Tetra Tech EM Inc., 2004b). On November 4, 2003, landfill gas monitoring and control activities were suspended; these activities were resumed on January 21, 2004, when a contract for continued activities was implemented. In September 2004, the Navy revised the Parcel E boundary, and the Industrial Landfill area was given the designation "Parcel E-2" (current parcel boundaries are shown on Figure 1).

In January 2005, the Navy transferred Parcel A to the City of San Francisco. The monthly report text and figures now designate this area as "Non-Navy Property."

1.2 PURPOSE AND SCOPE

This monthly monitoring report presents and summarizes the evaluation of monitoring data that were collected in January and early February 2006 for the January 2006 monitoring event and in response to detections above action levels during the monthly monitoring. Subsequent references will refer to this report as the January 2006 monthly report. This report was prepared using the requirements of 27 CCR §20934 as guidance. Specifically, this report provides the following:

- Concentrations of methane measured at each GMP and within each on-site structure.
- Concentrations of other gases (specifically oxygen, carbon dioxide, and non-methane organic compounds) measured at each GMP and within each on-site structure.
- Documentation of the dates and times of monitoring activities, and the barometric pressures, atmospheric temperatures, general weather conditions, probe pressures, and water levels measured or recorded.
- Names of sampling personnel, apparati used, and a brief description of the methods employed.
- A numbering system that correlates monitoring results with the corresponding GMPs and other locations monitored.
- Documentation of the dates, extraction locations, periods of operation, and any maintenance issues related to operation of the landfill gas control system.

1.3 REPORT ORGANIZATION

This report is organized as follows:

- Section 1 provides an introduction to and an overview of the recent investigations that have occurred at the landfill.
- Section 2 presents the overall objectives and methodologies of the monitoring program.
- Section 3 presents the results of the January 2006 monthly monitoring for landfill gas.
- Section 4 presents an evaluation of these results.
- Section 5 is an overall summary of the monitoring report and current system status.
- Section 6 lists the documents used to prepare this report.

Tables and figures follow Section 6. The following appendices also are included with this report, following the figures:

- Appendix A presents landfill gas monitoring data and depth-to-water data (as recorded on the Landfill Gas Monitoring Log and Water Level Monitoring Log).
- Appendix B provides a summary of other monitoring results for the current reporting period.

2 MONITORING PROGRAM OBJECTIVES AND METHODOLOGIES

This section discusses the objectives and methodologies of the landfill gas monitoring program at HPS Parcel E-2.

2.1 OBJECTIVES

The objective of monitoring landfill gas is to verify that the landfill gas control system at Parcel E-2 is effectively reducing levels of methane to below the LEL and preventing hazardous levels of landfill gas from migrating to the UCSF compound and non-Navy property. Title 27 CCR provides standards for monitoring and controlling combustible gases such as methane. Bay Area Air Quality Management District (BAAQMD) Regulation 8, Rule 34, addresses control of NMOC emissions from solid waste disposal sites.

The landfill gas monitoring and control requirements of 27 CCR and BAAQMD Rule 34 apply to landfills operating under state Resource Conservation and Recovery Act (RCRA) permits. These requirements can be applied to older, inactive, or closed landfills if they pose a potential threat to public health and safety or the environment. The applicability or relevance and appropriateness of 27 CCR requirements to the landfill at IR-01/21 will be evaluated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process. BAAQMD Rule 34 does not regulate the landfill at Parcel E-2. However, both the 27 CCR and Rule 34 requirements were used as guidelines for

development and implementation of the Final Interim Landfill Gas Monitoring and Control Plan (MCP) (Tetra Tech EM Inc., 2004c), pending completion of the final CERCLA remedy for the landfill.

Title 27 CCR §20921 sets forth the following three performance standards for control of landfill gases at closed landfills:

1. Concentrations of methane gas must not exceed 1.25 percent by volume in air (25 percent of the LEL) within on-site structures.
2. The concentration of methane gas migrating from the landfill must not exceed 5 percent by volume in air at the property boundary or an alternative boundary approved in accordance with §20925.
3. Trace gases (NMOCs) must be controlled to prevent adverse acute and chronic exposure to toxic or carcinogenic compounds.

The criteria for the first two requirements are clear, but the third requirement does not identify specific field monitoring limits for trace gas concentrations. As a result, action levels for field monitoring of NMOCs were established based on an evaluation of previous risk assessments and Tetra Tech EM Inc. health and safety criteria (Tetra Tech EM Inc., 2002). Tetra Tech EM Inc.'s health and safety criterion limits NMOCs in the breathing zone to 5 parts per million by volume (ppmv). This criterion will be applied to on-site structures and utilities that are accessible to workers, and to surface locations on the UCSF compound where landfill gas has been historically detected. These locations include the crawlspace under Building 830 and the surface locations shown on Figure 2.

Previous risk assessments described in the MCP show that subsurface trace gases found in GMPs within the UCSF compound and along Crisp Avenue do not pose an unacceptable health risk (Tetra Tech EM Inc., 2004c). An action level of 500 ppmv was established for NMOCs in GMPs. Historic monitoring results for NMOCs have been below 50 ppmv, an order of magnitude below this action level.

The 5 percent limit for methane at the property boundary (requirement 2 above) does not apply to either passive vents or to monitoring wells located on the landfill. Passive vents are part of the landfill gas migration control system, and frequently exceed 5 percent methane by design. The 5 percent limit does apply at the GMPs, which are located at various distances outside a Gundwall barrier that reduces the outward migration of landfill gases from the trench and passive vents.

The requirements for monitoring and reporting landfill gas, as set forth in 27 CCR, may be summarized as follows:

- Perimeter Monitoring Network (§20925): Gas monitoring probes will be located near the site property boundary with lateral spacing of no more than 1,000 feet and at depths above groundwater and bedrock.
- Structural Monitoring (§20931): The design of the monitoring network will encompass on-site structures, including buildings, basements, manholes, pipelines, and utility vaults. Methods for on-site structural monitoring may include periodic

monitoring using either permanently installed probes or gas surveys, or continuous monitoring systems.

- Monitoring Parameters (§20932): All gas monitoring probes and on-site structures will be monitored for methane, and for trace NMOCs if required.
- Monitoring Frequency (§20933): At a minimum, quarterly monitoring is required. More frequent monitoring may be required at locations where monitoring results indicate that landfill gas is migrating or is accumulating in structures.
- Reporting (§20934): Results of landfill gas monitoring will be submitted to the California Integrated Waste Management Board within 90 days, provided compliance levels are maintained. When compliance levels are exceeded, the results must be submitted within 5 days. A letter that describes the nature and extent of the problem and any immediate corrective actions that must be taken to protect public health and safety and the environment will be submitted within 10 days.

Portions of the landfill gas control system, and some of the current monitoring points, are on property the Navy has transferred to UCSF. Negotiations are under way between the Navy and UCSF regarding the property that contains the landfill gas control system.

2.2 MONITORING METHODOLOGIES

Each month, landfill gas is monitored to evaluate migration from the landfill to verify that the landfill gas control system is achieving the regulatory requirements set forth in 27 CCR §20921 and BAAQMD Rule 34. This section briefly discusses the procedures used to monitor landfill gas. The MCP (Tetra Tech EM Inc., 2004c) provides a more detailed discussion of monitoring procedures.

A CES-Landtec GEM 2000 landfill gas meter was used to monitor concentrations of methane, oxygen, and carbon dioxide, the percentage of the methane LEL, and real-time temperature and barometric pressure. A calibrated Mini-RAE Plus Classic photoionization detector (PID) with a 10.6 electron-volt lamp was used to monitor NMOCs. A Gilian GilAir air-sampling pump was used to purge the GMPs prior to monitoring. Pressure in the GMPs was measured using a Magnehelic pressure gauge.

Before soil gas readings were recorded, pressure was measured at the GMPs using a Magnehelic pressure gauge with a scale of 0 to 10 inches of water. The air pump was then connected to the sampling port of the GMP and used to purge air from the GMP for at least 1 minute at 3,000 cubic centimeters per minute. After the GMP was purged, the GEM 2000 landfill gas meter was connected to the sampling port. Readings were recorded when concentrations of landfill gas were stable for at least 30 seconds. Background levels of NMOCs were recorded from the PID by recording the ambient air reading before the meter was connected to the sampling port. After background levels of NMOCs were recorded, the PID was connected to the sampling port to measure NMOCs. Concentrations of NMOCs were recorded when the PID indicated a stable value for at least 30 seconds.

Table 1 identifies the sampling personnel and the equipment used during monitoring. Table 2 lists the monitoring locations by category.

2.2.1 Active Gas Extraction Schedule

From January 27, 2004, to August 28, 2004, gas extraction along the landfill gas barrier wall was performed semi-continuously (i.e., except for brief shutdowns for maintenance) from PV-02 and PV-03, and occasionally at GMP24 as needed. The active gas extraction system was inoperable from August 28, 2004 to September 29, 2004 due to a power outage at the electrical service drop (see Section 2.4). During this time period, the system was passively extracting from PV-01, PV-02, PV-04, and PV-05. PV-03 was not vented during this time.

Active gas extraction was resumed at PV-02 on September 29, 2004, and continued until October 7, along with extraction at GMP24 from September 30, 2004 to October 4, 2004 (ITSI 2005a, 2005b). In the months of October 2004 through February 2005, active extraction was performed continuously at PV-02 for one full week just prior to the monthly gas monitoring event.

Because of concerns that an extraction schedule limited to one week per month might allow landfill gas to migrate off site during the rest of the month, when extraction was not occurring, the active gas extraction schedule was changed in March 2005. The new schedule is to perform active gas extraction for 40 consecutive hours each week.

Beginning in May 2005, monthly gas monitoring events are being performed following a period of several days during which there has been only passive extraction and just before the active extraction system is activated, so that the data collected represent the presumed worst-case conditions of the present extraction schedule.

Beginning in October 2005, passive vents PV-01, PV-03, PV-04, and PV-05 were closed off during any active extraction at PV-02, to maximize the efficiency of methane extraction from the interception trench. These vents were re-opened when active extraction was concluded. This practice was discontinued in December 2005 because of concerns that closing the vents may put undue vacuum pressure on the interception trench. The vents are now left open at all times.

During the month of January 2006, and into the month of February 2006 (as a response action), active extraction was conducted as follows:

System On at GMP-01A	System Off at GMP-01A	Hours Run	Notes
1/25/06, 1200	1/31/06, 1500	147.0	Response action.
System On at GMP-07A	System Off at GMP-07A	Hours Run	Notes
1/23/06, 1600	2/2/06, 1430	238.5	Response action.
Total January 1 - February 2, 2006 GMP Operating Hours:		385.5	Total extraction at GMP01A and GMP07A

System On at PV-02	System Off at PV-02	Hours Run	Notes
1/3/06, 1200	1/5/06, 0400	40.0	
1/10/06, 1200	1/12/06, 0400	40.0	
1/18/06, 1200	1/20/06, 1200	40.0	
Week of 1/23/06		0.0	No extraction at PV-02 (both units in use at GMP01A and GMP07A).
1/31/06, 1500	2/6/06, 1230	141.5	Response extraction through weekend.
Total January 1 - February 6 PV-02 Operating Hours:		261.5	
Total January-February Extraction Time at All Locations:		**647**	**Includes operating hours at all three extraction locations (GMP01A, GMP07A, PV-02) for January 1 through February 6, 2006**

2.3 DATA EVALUATION

Results of landfill gas monitoring for January 2006 were evaluated against the data quality objectives for methane and NMOCs outlined in the MCP (Tetra Tech EM Inc., 2004c) based on the performance standards set forth in 27 CCR and BAAQMD Rule 34. Section 3 summarizes the results of landfill gas monitoring in January 2006.

2.4 DEVIATIONS

Following the damage to the electrical service drop which left the landfill gas control system without power from August 28 through September 28, 2004, temporary power is being supplied by a portable generator until a permanent power source is restored, as noted in Section 3.1.5 below.

All of the extraction well and electrical vaults that had been monitored as on-site structures were excavated and removed by TetraTech EC, Inc., construction crews between September 2005 and January 2006, and therefore could not be monitored during the January 2006 event. It is not yet known if these structures are to be replaced.

As per the MCP, active gas extraction was performed after methane was observed to be exceeding the regulatory limit, with extraction at the two GMPs with exceedances (see Section 3.1.1 for details). In a divergence from the MCP, the second extraction unit was moved from GMP01A to PV-02 on Monday, January 30, to remove methane more efficiently by extracting from the collection trench, thus reducing methane levels in the GMPs more rapidly.

3 MONITORING RESULTS

This section presents the results for monthly monitoring at the landfill during January 2006, based on monitoring measurements and depth-to-water readings recorded on January 23, 2006 and follow-up measurements recorded through February 2, 2006. Section 3.1.5 discusses operation and maintenance of the landfill gas control system. Appendix A contains the Landfill Gas Monitoring Log and the Water Level Monitoring Log for the January 2006 monitoring event. Appendix B summarizes the results of landfill gas monitoring at locations other than those specified in the MCP (Tetra Tech EM Inc., 2004c). These locations, specifically the groundwater monitoring wells on the landfill cap, are being monitored monthly to further evaluate the relative rate of gas generation in the landfill. Appendix C contains copies of letters submitted to the California Integrated Waste Management Board (CIWMB) reporting the methane regulatory exceedances during and after the January monitoring event.

3.1 METHANE RESULTS

This section summarizes the results of methane monitoring for the January 2006 monitoring event. Figure 2 shows the locations that were monitored; the January 2006 results for methane (excluding passive vents and the wells listed in Appendix B) are posted on Figure 3 and Figure 4. Table 3 presents the methane results for each MCP-specified monitoring location. Table 3a includes all response-action data collected for the January 2006 event. Note that all methane concentrations are provided in percentage of methane by volume.

The subsections below present the results for monitoring locations in the following areas:

- the fence line between the landfill and the UCSF compound,
- the UCSF compound,
- Crisp Avenue, beyond (north of) the UCSF compound,
- ambient air and structure locations, and
- the landfill gas control system.

The fence line between the landfill and the UCSF compound is considered the property boundary for the landfill gas monitoring program (Tetra Tech EM Inc., 2004c), which is of significance for reporting the monitoring results consistent with Title 27 CCR §20921 (see section 2.1 above).

3.1.1 Fence Line

Concentrations of methane in the GMPs along the fence line north of the landfill (GMP01A through GMP12, GMP20, and GMP21) are representative of concentrations of methane migrating from the site boundary. As noted in Section 2.4, during the routine monitoring event on January 23, 2006, methane was detected in GMP01A and GMP07A on the fence line at percent-by-volume levels of 3.3 and 7.2, respectively.

Following the completion of the monitoring round, the GEM-2000 was re-calibrated and the two GMPs in question were re-monitored the same day to ensure the validity of the previous readings. At this time, methane was detected in GMP01A at 25.5 % by volume and in GMP07A at 32.0% by volume. As there were no methane detections at any other GMP above the HPS action level specified in Figure 19 of the Monitoring and Control Plan (Tetra Tech EM Inc., 2004c), and since the accuracy of the GEM-2000 instrument was confirmed, no other GMPs were re-monitored. The GEM-2000 was then re-calibrated again to ensure proper function, and again the meter was performing within 5% of the standard. To ensure the accuracy of the readings, a second, pre-calibrated GEM-2000 was procured. When the two GMPs were sampled with the second unit, methane was detected in GMP01A at 25.1% by volume and in GMP07A at 34.6% by volume (see Table 3a for all response data). Since these confirmed readings were well over the regulatory compliance limit of 5% methane by volume, UCSF personnel were notified of the exceedance on January 24 and a notification letter was mailed to the CIWMB on January 27 (see Appendix C).

As dictated by Figure 22 of the Master Control Plan (MCP), active extraction was necessary from both GMP01A and GMP07A. However, due to the fact that these GMPs are approximately 1,200 feet apart, two extraction trailers could not be powered by a single generator due to electrical load loss. Therefore, as methane was present at a higher level at GMP07A than at GMP01A, active extraction was initiated at GMP07A at 1400 hours on January 23. A second generator was procured, and active extraction began at GMP01A at 1200 hours on January 25.

The MCP calls for active extraction and follow-up monitoring until methane at any location where an exceedance is reported is below 1% by volume for two consecutive days. Therefore, monitoring was performed daily through Friday, January 27 at both GMP01A and GMP07A. During this time, despite diurnal fluctuations, methane levels gradually subsided to 1.2% by volume at GMP01A and 11.0% by volume at GMP07A. These levels, although much less than those detected on January 23, were still above 1%, and active extraction was continued at GMP01A and GMP07A through the weekend.

On Monday, January 30, despite the fact that direct active extraction had been conducted at both GMPs for several days, methane levels had risen to 6.1% at GMP01A and 30.1% at GMP07A. Active extraction thus was continued at GMP07A, while the second extraction unit was moved from GMP01A to PV-02 to extract methane from the collection trench more efficiently and thus reduce methane levels in the GMPs more rapidly.

On the morning of February 1, methane was down to 0.0% at GMP01A and 0.8% at GMP07A. That afternoon, methane was reported at 0.0% at GMP01A and 0.6% at GMP07A. On February 2, both GMPs were at 0.0% all day. As this constituted two consecutive days where methane was below 1% in both GMPs, active extraction was ended at GMP07A (per Figure 22 of the MCP). A letter was sent to the CIWMB on February 3 to inform them that both GMPs were again compliant with all applicable regulations (see Appendix C). Active extraction was continued at PV-02 until 1230 hours on Monday, February 6, to ensure that methane levels remained below action levels.

During the January 23, 2006, monitoring event, methane met the performance standard of less than 5 percent by volume (the LEL for methane) at all other GMPs along the fence line. Methane was detected in GMP12 at 0.4% by volume. This concentration was well below both the regulatory standard of 5% and the HPS site action level of 2.5%. Therefore, no extraction or follow-up monitoring was necessary at GMP12. Figure 3 and Table 3 show the results for methane at GMPs along the fence line between Parcel E-2 and the UCSF compound.

3.1.2 UCSF Compound

During the January 2006 monitoring event, methane met the performance standard of less than 5 percent by volume (the LEL for methane) at all GMPs on the UCSF compound (GMP22 through GMP26). Methane was detected at one location: GMP24 had a percent-by-volume level of 0. 4. This concentration was below both the regulatory limit of 5% and the HPS site action level of 2.5%. Therefore, no extraction or follow-up monitoring was necessary in the UCSF compound. Figure 3 and Table 3 show the methane monitoring results for GMPs within the UCSF compound.

On January 26, during the response action for the exceedances at GMP01A and GMP07A described in Section 3.1.1, GMP23 and GMP24 were also monitored as a precautionary measure. Methane was detected at 0.0% in GMP23, and 0.5% in GMP24.

3.1.3 Crisp Avenue

On January 23, 2006, methane was not detected in any of the GMPs along Crisp Avenue (GMP13 through GMP19 and GMP27 through GMP32), and therefore was well below both the regulatory limit of 5% and the HPS site action level of 2.5%. Figure 3 and Table 3 show the methane monitoring results for these GMPs.

3.1.4 Ambient Air and Structure Locations

On January 23, 2006, methane was monitored at the ambient air and structure locations. These locations included the light pole, the ground surface along the fence (location A), the basketball court (location B), and the crawlspace at Building 830, all within the UCSF compound; and at the remaining on-site utilities locations. Methane was not detected in any of the on-site structures, at ambient air locations, or in the crawlspace at Building 830 in January 2006. (The crawlspace at Building 830 is being monitored by the Navy because of its close proximity to the landfill.) Figure 4 and Table 3 show the methane monitoring results for these locations.

3.1.5 Control System

On January 23, 2006, concentrations of methane at the landfill gas control system ranged from a high of 61.9 percent by volume at the PV-05 influent to 0.0 percent by volume at PV-03 and PV-04. Table 3 presents the results for methane from monitoring locations at the

landfill gas control system. As Figure 19 of the MCP specifies that temperatures at the control system vents be less than 55 °C (113 °F), these temperatures also are monitored during monthly monitoring events, and the readings are documented in Appendix A. The 55 °C limit has not been exceeded since monitoring began.

As documented in the August and September 2004 monthly reports (ITSI 2005c, 2005a), the landfill gas control system was without power from August 28 through September 28, 2004, due to damage to the electrical service drop caused by workers at the Golden Gate Railroad Museum yard. A mobile generator was brought on site on September 29, 2004, and has been employed as the power source for active extraction since that time (see Section 2.2.1).

During June 2005, PG&E approved a revised power installation plan to provide temporary power for three years. The plan includes installing two power poles, coordinating a power drop and meter installation with PG&E, terminating unused conduits, and removing an existing power pole that is no longer needed. The Navy has approved the cost proposal for the performance of this work and in February 2006, PG&E approved the final plan for the installation work. Installation field activities are scheduled to begin in late February 2006. The generator rental has been extended through February 28, 2006.

3.2 TRACE GAS RESULTS

During the January 2006 monitoring event, NMOCs were well below action levels at all monitoring locations. (Action levels are: 500 ppmv at GMPs, 5 ppmv within Building 830, 5 ppmv in on-site utilities, 5 ppmv in ambient air [recorded in the breathing zone], and 100 ppmv for 2 consecutive days from the outlet of the control system.) Table 4 presents the monitoring results for NMOCs during January 2006. Figures 10 and 11 show the historical results for NMOCs at GMPs at the fence line and on the UCSF compound for each monitoring event from February 2005 through January 2006.

NMOCs were not detected above background in the GMPs, ambient air, or structure monitoring locations. NMOCs were monitored at three locations at each of the PVs: at the influent, after the first carbon canister, and at the effluent (or Hydrosil) canister. NMOCs were not detected in any of the passive vent systems at levels above background.

Oxygen concentrations in all GMPs on the UCSF compound and most of the GMPs along the fence line were significantly below the standard atmospheric concentration of 20.9 percent. Table 5 presents the monitoring results for oxygen during the January 2006 monitoring event. Oxygen values in these areas ranged from 0.0 percent by volume (at GMP24 and GMP25) to 15.2 percent (at GMP26) in the UCSF compound GMPs, and from 0.0 percent (at GMP12, GMP01A and GMP07A) to 20.4 percent (at GMP21) along the fence line. Eleven of the 14 fence line GMPs had less than 18.5 percent oxygen.

Concentrations of oxygen reported in the other monitoring areas were closer to the standard atmospheric value. Oxygen concentrations at GMPs along Crisp Avenue were between 16.0 and 20.1 percent by volume. Oxygen is not regulated under 27 CCR or BAAQMD Rule 34, but low concentrations of oxygen in soil may be associated with landfill gas.

Carbon dioxide concentrations in the GMPs closest to the landfill (i.e., those along the fence line and on the UCSF compound) ranged from 0.7 to 12.2 percent by volume (Table 6), significantly above the standard atmospheric concentration of approximately 0.04 percent (400 ppmv). Carbon dioxide levels in the GMPs along Crisp Avenue, farther from the landfill, generally were lower, ranging from 0.0 to 1.6 percent by volume. Carbon dioxide is not regulated under 27 CCR or BAAQMD Rule 34, but carbon dioxide concentrations frequently are elevated where landfill gas is present.

3.3 PROBE PRESSURE

Measurement of air pressure at the GMPs helps assess whether landfill gas is accumulating, and can provide information about the influence of the extraction system on reducing any increases in the generation of landfill gas. Table 7 presents the probe pressure readings recorded at GMPs during the January 2006 monitoring event. On January 23, 2006, gauge pressure at the GMPs (pressure in the probes relative to atmospheric pressure) was measured using a Magnehelic pressure gauge. No probe pressure was detected at any GMP.

3.4 WATER LEVEL RESULTS

Water level measurements are recorded to confirm that the bottom of the landfill gas barrier wall is below the top of the saturated zone, and is preventing landfill gas from migrating underneath the barrier wall. Water level measurements also provide information about the thickness of the vadose zone, as the lower boundary of the vadose zone is determined by the elevation of the water table.

On January 23, 2006, water levels were measured at the GMPs along Crisp Avenue (GMP27 through GMP32) and at 11 additional groundwater monitoring wells and piezometers. Water levels were measured as depths below the tops of well casings. Subsequently, these measurements were converted to depths below ground surface and to elevations relative to mean sea level (msl) using surveyed elevations. Table 8 shows the measured water levels and the converted values. Water levels also are shown on tables 3 through 6 for comparison with GMP screened intervals.

Figure 5 shows the groundwater potentiometric surface of the A-aquifer (shallow groundwater zone) on January 23, 2006, and the elevations of the bottom of the landfill gas barrier wall at these locations. Groundwater generally flows to the east and southeast from the non-Navy property north of Parcel E-2 toward San Francisco Bay and to a groundwater sink near the northern end of the boundary between Parcels D and E. The water level readings for January 23, 2006, indicate that the bottom of the barrier wall, which ranges in elevation from –1.2 feet above msl (i.e., 1.2 feet below msl) to 1.9 feet above msl, was submerged below the water table at all locations monitored.

As discussed in greater detail in Section 4, there appears to be an inverse relationship between methane concentrations and groundwater elevations at GMP24 (which generally is

the GMP with the highest methane concentrations). In general, the lower the groundwater elevation near GMP24, the higher the methane concentration at GMP24. Figure 12 illustrates this relationship. The opposite relationship appears to exist for methane concentrations and groundwater elevations near GMP07A, where detected concentrations of methane are reported only in the wet season (see Figure 14).

3.5 METEOROLOGICAL DATA

Meteorological data are used qualitatively to evaluate whether changes in weather affect the behavior of landfill gas. For example, a rapid decrease in barometric pressure may affect the amount of landfill gas that is released. Temperature may affect the rate of landfill gas generation. In addition, precipitation and the elevation of the water table influence the volume of the vadose zone, and may influence the potential buildup of pressure behind submerged probe screens.

Meteorological data are collected from an on-site station located southeast of the landfill cap at an elevation of about 25 feet above msl (see Figure 2). The location of the meteorological station is considered representative of the HPS area because data collection is not limited by proximity to complex terrain or large structures and because the station is located on flat terrain. Sensors on the meteorological tower record wind speed, wind direction, air temperature, relative humidity, precipitation, dew point, and barometric pressure. Sensor readings of all parameters are recorded at one-second intervals, averaged, and stored as 15- and 60-minute averages in the data logger. Weekly data reports are available on the Navy's public Web site at http://www.efdsw.navfac.navy.mil/06/HPS_E/Landfill_Gas/index.htm#meteorological_data.

Table 9 presents daily meteorological data collected during January 2006. Daily meteorological data are averages of hourly data, except for daily precipitation, which is the sum of hourly precipitation data, and cumulative precipitation, which is the season-to-date total at the end of each day.

Table 10 summarizes monthly meteorological data for January 2005 through January 2006. Monthly meteorological data are averages of hourly data, except for monthly precipitation, which is the sum of daily precipitation data, and cumulative precipitation, which is the season to-date total at the end of each month.

Concentrations of methane may be affected by atmospheric variations, although other factors (e.g., groundwater elevation, changes in the operation of the extraction system) may overshadow any effects caused by atmospheric variations. Figures 6 and 7 show the daily barometric pressures and observed methane concentrations for each day that methane was monitored at GMPs at the fence line and on the UCSF compound. Similarly, figures 8 and 9 show the daily temperatures and the observed methane concentrations at the same GMPs. No correlations between methane readings and meteorological parameters are apparent at this time-scale of monitoring (monthly), because meteorological parameters vary more rapidly. However, the follow-up monitoring performed after the January 2006 event suggests a likely inverse relationship between barometric pressure and methane at GMP07A,

as reflected on Figure 14. This relationship is probably related to the widely documented effect of "barometric pumping," in which the difference between atmospheric pressure and soil-gas pressure determines the direction of flow between the atmosphere and the soil gas. In general, when atmoshperic pressure is high, air moves into the subsurface, and soil gases such as methane are inhibited from escaping (and thus methane values at GMPs decline). In addition to these short-term meteorological effects, longer-term (seasonal) effects on methane concentrations at GMPs appear to determine methane occurrence, as further discussed in Section 4.

4 EVALUATION OF RESULTS

The primary objective of monthly monitoring of landfill gases is to verify that the landfill gas control system is effective in preventing migration of landfill gas to the UCSF compound and adjacent Non-Navy property. Monitoring locations include the GMPs, ambient air locations, the crawlspace at Building 830, the on-site utilities, and the landfill gas control system.

Beginning in May 2005 and continuing until permanent power is re-established to the active control system, monthly gas monitoring events are performed just before the active gas extraction system is turned on for its weekly operating period, after a period of several days during which there has been only passive extraction. This schedule allows the Navy to collect data that represent the presumable worst-case conditions of the present extraction schedule.

A year has passed since the January 2005 spike in NMOC concentrations at GMP22, GMP23, and GMP24 on the UCSF compound. The record of NMOC observations at these locations in the past year, presented on Figure 11, indicates that NMOC concentrations at these GMPs have been considerably lower in the last year than they were in January 2005; there have been no detections above background since July 2005. Also, NMOCs had not been detected at these GMPs in the five months before January 2005. These observations are consistent with the idea that the trenching performed on the UCSF property in late December 2004 and early January 2005 had some role in the observed temporary increases in NMOCs, perhaps through one of the mechanisms discussed below and in the January 2005 report (ITSI, 2005d). The origin of the observed NMOCs cannot be stated with any certainty. However, it appears that any NMOC source or influence that occurred in January 2005 was transitory. It should also be noted that even the peak NMOC concentrations (in January 2005) were well below the NMOC action level for GMPs of 500 ppmv.

Since regular monitoring commenced in January 2004, methane concentrations at GMP24 have exceeded 2.5 percent by volume on five occasions (May, July, and September of 2004, and in August and October of 2005), requiring activation of the active gas extraction system. All five occasions are in the drier half of the year, and this pattern may reflect seasonal influences on gas migration. Methane concentrations at GMP23 have followed a similar seasonal pattern (see Figure 12).

Groundwater elevations on the UCSF compound are in the range of two to four feet lower in the dry season than in the wet season; methane concentrations above 2.5% have been reported only during periods when groundwater near GMP24 has been below about five feet (see Figure 5 for groundwater elevations in January 2006). One possible explanation for the elevated dry-season detections of methane is that lower groundwater levels, which result in a thicker and less constricted vadose zone, permit greater gas flow in the subsurface. The system will continue to be observed for possible seasonal and other influences on gas migration.

More information is being gathered to account for the recent methane detections at GMP01A and GMP07A; this discussion will be presented in the February 2006 report.

5 SUMMARY

Monthly landfill gas monitoring and water level measurements took place on January 23, 2006. Title 27 CCR limits concentrations of methane gas to 5 percent by volume at the site boundary and 1.25 percent by volume in on-site structures. During the routine monitoring event on January 23, 2006, methane was detected in GMP01A and GMP07A on the fence line at concentrations of 3.3 and 7.2 percent by volume, respectively. Later that afternoon, methane was detected at GMP01A at 25.5 % by volume and at GMP07A at 32.0% by volume. Since these confirmed readings were well over the regulatory compliance limit of 5% methane by volume, UCSF personnel were notified of the exceedance, and a notification letter was sent to the CIWMB on January 27.

On February 1, after several days of extraction from GMP01A, GMP07A, and PV-02, methane was down to 0.0% at GMP01A and 0.6% at GMP07A, and on February 2, both GMPs were at 0.0%. As this constituted two consecutive days where methane was below 1% in both GMPs, active extraction was ended at GMP07A (per Figure 22 of the MCP) and a letter was sent to the CIWMB on February 3. Methane at all other GMPs was below the on-site action level for increased monitoring (2.5% by volume) established by the MCP (Tetra Tech EM Inc., 2004c); therefore, active gas extraction and follow-up monitoring were not necessary at these locations.

The action levels for NMOCs (established based on an evaluation of previous risk assessments and Tetra Tech EM Inc. health and safety criteria [Tetra Tech EM Inc., 2002]) are 500 ppmv in GMPs, 5 ppmv within Building 830, 5 ppmv in on-site utilities, 5 ppmv in ambient air (recorded in the breathing zone), and 100 ppmv for 2 consecutive days from the outlet of the control system. During the January 2006 monitoring event, concentrations of NMOCs at all monitoring locations at the site were at background concentrations, well below the action levels.

6 REFERENCES

Innovative Technical Solutions, Inc. (ITSI), 2004. Final Monthly Gas Monitoring Report for July 2004, Post-Removal Action, Parcel E, Industrial Landfill, Hunters Point Shipyard, San Francisco, California. October 25.

ITSI, 2005a. Final Monthly Gas Monitoring Report for September 2004, Post-Removal Action, Parcel E, Industrial Landfill, Hunters Point Shipyard, San Francisco, California. January 31.

ITSI, 2005b. Final Monthly Gas Monitoring Report for October 2004, Post-Removal Action, Parcel E, Industrial Landfill, Hunters Point Shipyard, San Francisco, California. May 10.

ITSI, 2005c. Final Monthly Gas Monitoring Report for August 2004, Post-Removal Action, Parcel E, Industrial Landfill, Hunters Point Shipyard, San Francisco, California. January 31.

ITSI, 2005d. Final Monthly Gas Monitoring Report for January 2005, Post-Removal Action, Parcel E, Industrial Landfill, Hunters Point Shipyard, San Francisco, California. April 22.

Tetra Tech EM Inc., 2002. Basewide Health and Safety Plan, Hunters Point Shipyard, San Francisco, California. March 21.

Tetra Tech EM Inc., 2003. Final Parcel E Nonstandard Data Gaps Investigation, Landfill Gas Characterization, Hunters Point Shipyard, San Francisco, California. September 5.

Tetra Tech EM Inc., 2004a. Final Monthly Landfill Gas Monitoring Report for January 2004, Post-Removal Action, Parcel E, Industrial Landfill, Hunters Point Shipyard, San Francisco, California. August 13.

Tetra Tech EM Inc., 2004b. Draft Landfill Gas Time-Critical Removal Action Closeout Report, Parcel E, Industrial Landfill, Hunters Point Shipyard, San Francisco, California. March 19.

Tetra Tech EM Inc., 2004c. Final Interim Landfill Gas Monitoring and Control Plan, Parcel E, Industrial Landfill, Hunters Point Shipyard, San Francisco, California. August 13.

TABLES

TABLE 1: PERSONNEL AND EQUIPMENT

Monthly Landfill Gas Monitoring Report for January 2006, Post-Removal Action,
Parcel E-2 Industrial Landfill, Hunters Point Shipyard, San Francisco, California

PERSONNEL

Name	Responsibility	Company
Brett Womack	Task Manager	Innovative Technical Solutions, Inc.
Brian Dee	Field Technician	Innovative Technical Solutions, Inc.

EQUIPMENT

Sampling Apparatus	Manufacturer/Model	Purpose
Landfill Gas Meter	CES-LANDTEC GEM-2000	Monitor methane, oxygen, carbon dioxide, and lower explosive limit
Photoionization Detector (10.6 electron-volt lamp)	Mini-RAE Plus Classic PGM-761S	Monitor non-methane organic compounds
Air Sampling Pump	Gilian GilAir-5	Purge GMPs
Pressure Gauge	Magnehelic	Measure pressure in GMPs

TABLE 2: LANDFILL GAS MONITORING LOCATIONS

Monthly Landfill Gas Monitoring Report for January 2006, Post-Removal Action,
Parcel E-2 Industrial Landfill, Hunters Point Shipyard, San Francisco, California

Monitoring Location	Description
Fence line GMPs	GMP01A, GMP02A, GMP03, GMP04A, GMP05B, GMP06B, GMP07A, GMP08A, GMP09, GMP10, GMP11A, GMP12, GMP20, and GMP21
UCSF Compound GMPs	GMP22 to GMP26
Crisp Avenue GMPs	GMP13 to GMP19 and GMP27 to GMP32
Ambient Air Locations	Light Pole, Ground Surface Along Fence, and Basketball Court
Occupied Structure	Building 830 Crawlspace
On-Site Utilities [a]	DP1 and DP2
Passive Vents	PV-01, PV-02, PV-03, PV-04, and PV-05
Extraction Wells [b]	EX-5, EX-6, EX-7, and EX-8
Groundwater Elevation Locations	GMP27, GMP28, GMP29, GMP30, GMP31, GMP32, IR01MW02B, IR01MW03A, IR01MW05A, IR01MW10A, IR01MW11A, IR01MW12A, IR01P04A, IR01P03AA, IR01P03AB, IR74MW01A, and IR76MW13A
Additional Monitoring Locations	IR01MW16A, IR01MW18A, IR01MW366A, IR01MWI-5

Notes:

[a] EW108, EW122, EV122, EW134, EV134, EW138, EV138, EW142, EV142, EW146, EV146, EW150, EV150, EW154, EW158, and EV158 were excavated and removed between September 2005 and January 2006, and are no longer monitored.

[b] Monitoring at extraction wells is required only if the control system is actively extracting from these locations; however, they also may be included as part of response action monitoring.

DP discharge point
IR Installation Restoration
GMP gas monitoring probe
PV passive vent
MW monitoring well
UCSF University of California, San Francisco

TABLE 3: METHANE CONCENTRATIONS, JANUARY 23, 2006

Monthly Landfill Gas Monitoring Report for January 2006, Post-Removal Action,
Parcel E-2 Industrial Landfill, Hunters Point Shipyard, San Francisco, California

Location	Monitoring Location ID Number	Screened Interval (feet bgs)	Depth to Water (feet bgs)	Methane Concentration on January 23, 2006 (percent by volume)
Fence Line GMPs	GMP01A	6.0 to 13.5	NA	25.5***
	GMP02A	6.0 to 13.5	NA	0.0
	GMP03	6.0 to 13.5	NA	0.0
	GMP04A	6.0 to 13.5	NA	0.0
	GMP05B	6.0 to 12.5	NA	0.0
	GMP06B	6.0 to 13.5	NA	0.0
	GMP07A	6.0 to 13.5	NA	34.6***
	GMP08A	4.5 to 9.5	NA	0.0
	GMP09	6.0 to 9.5	NA	0.0
	GMP10	4.0 to 6.5	NA	0.0
	GMP11A	4.0 to 5.5	NA	0.0
	GMP12	5.0 to 13.0	NA	0.4
	GMP20	3.5 to 4.5	NA	0.0
	GMP21	3.5 to 4.5	NA	0.0
UCSF Compound GMPs	GMP22	6.0 to 13.5	NA	0.0
	GMP23	6.0 to 13.5	NA	0.0
	GMP23 (1/26)**	6.0 to 13.5	NA	0.0 **
	GMP24	6.0 to 13.0	NA	0.4
	GMP24 (1/26)**	6.0 to 13.0	NA	0.5 **
	GMP25	6.5 to 11.5	NA	0.0
	GMP26	6.5 to 11.5	NA	0.0
Crisp Avenue GMPs	GMP13	6.0 to 12.0	NA	0.0
	GMP14	6.0 to 10.0	NA	0.0
	GMP15	6.0 to 12.0	NA	0.0
	GMP16	5.0 to 10.0	NA	0.0
	GMP17	6.0 to 10.0	NA	0.0
	GMP18	6.0 to 12.0	NA	0.0
	GMP19	4.5 to 5.5	NA	0.0
	GMP27	4.7 to 22.2	9.41	0.0
	GMP28	6.2 to 21.2	13.65	0.0
	GMP29	6.2 to 18.7	11.86	0.0
	GMP30	4.5 to 17.0	10.79	0.0
	GMP31	6.0 to 16.0	10.67	0.0
	GMP32	4.75 to 14.75	10.32	0.0

TABLE 3: METHANE CONCENTRATIONS, JANUARY 23, 2006 (continued)

Monthly Landfill Gas Monitoring Report for January 2006, Post-Removal Action,
Parcel E-2 Industrial Landfill, Hunters Point Shipyard, San Francisco, California

Location	Monitoring Location ID Number	Screened Interval (feet bgs)	Depth to Water (feet bgs)	Methane Concentration on January 23, 2006 (percent by volume)
Ambient Air Locations	Light Pole	NA	NA	0.0
	Ground Surface Along Fence	NA	NA	0.0
	Basketball Court	NA	NA	0.0
Occupied Structure	Building 830 Crawlspace	NA	NA	0.0
On-Site Utilities [a]	DP1	NA	NA	0.0
	DP2	NA	NA	0.0
Passive Vents	PV-01 Influent	NA	NA	49.9 *
	PV-01 Carbon 1	NA	NA	50.3 *
	PV-01 Hydrosil	NA	NA	26.9 *
	PV-02 Influent	NA	NA	50.9 *
	PV-02 Carbon 1	NA	NA	49.9 *
	PV-02 Hydrosil	NA	NA	25.8 *
	PV-03 Influent	NA	NA	0.0
	PV-03 Carbon 1	NA	NA	0.0
	PV-03 Hydrosil	NA	NA	0.0
	PV-04 Influent	NA	NA	0.0
	PV-04 Carbon 1	NA	NA	0.0
	PV-04 Hydrosil	NA	NA	0.0
	PV-05 Influent	NA	NA	61.7 *
	PV-05 Carbon 1	NA	NA	61.9 *
	PV-05 Hydrosil	NA	NA	58.5 *

Notes:

* The regulatory limit of 5% methane does not apply to passive vents, which are part of the remedial system designed to collect and control migration of landfill gas.

** Monitoring performed on January 26 was precautionary in nature.

*** Values listed for GMP01A and GMP07A are the highest values recorded on January 23, including response-action readings.

[a] EW108, EW122, EV122, EW134, EV134, EW138, EV138, EW142, EV142, EW146, EV146, EW150, EV150, EW154, EW158, and EV158 were excavated and removed between September 2005 and January 2006, and are no longer monitored.

bgs below ground surface
DP discharge point
GMP gas monitoring probe
NA not applicable
PV passive vent
UCSF University of California, San Francisco

Data from additional (landfill cap) monitoring locations are shown in Appendix B

TABLE 3a: METHANE CONCENTRATIONS, JANUARY 23 – FEBRUARY 2, 2006

Monthly Landfill Gas Monitoring Report for January 2006, Post-Removal Action,
Parcel E-2 Industrial Landfill, Hunters Point Shipyard, San Francisco, California

Location	Date	Time	Methane (% by volume)	Location	Date	Time	Methane (% by volume)
GMP01A	1/23	0945	3.3	GMP07A	1/23	1048	7.2
	1/23	1404	25.5*		1/23	1412	32.0*
	1/23	1557	25.1**		1/23	1559	34.6**
	1/24	1045	6.0		1/24	1035	25.1
	1/24	1401	18.4		1/24	1354	31.1
	1/25	0728	2.6		1/25	0722	20.9
	1/25	1156	2.8		1/25	1209	19.6
	1/25	1615	2.7		1/25	1625	20.5
	1/26	0852	0.3		1/26	0907	6.8
	1/26	1200	1.5		1/26	1213	6.9
	1/26	1437	2.4		1/26	1448	12.3
	1/27	0827	1.2		1/27	0842	11.0
	1/30	1020	6.0		1/30	1033	26.4
	1/30	1546	6.1		1/30	1556	30.1
	1/31	0919	3.1		1/31	0945	14.8
	1/31	1414	4.4		1/31	1505	13.3
	2/1	0901	0.0		2/1	0924	0.8
	2/1	1503	0.0		2/1	1513	0.6
	2/2	0807	0.0		2/2	0824	0.0
	2/2	1418	0.0		2/2	1423	0.0

Notes:

GMP gas monitoring probe

* Measurement taken with re-calibrated GEM-2000 landfill gas analyzer
** Measurement taken with second rental GEM-2000 landfill gas analyzer

TABLE 4: NMOC CONCENTRATIONS, JANUARY 23, 2006

Monthly Landfill Gas Monitoring Report for January 2006, Post-Removal Action,
Parcel E-2 Industrial Landfill, Hunters Point Shipyard, San Francisco, California

Location	Monitoring Location ID Number	Screened Interval (feet bgs)	Depth to Water (feet bgs)	NMOC Concentration on January 23, 2006 (parts per million)
Fence Line GMPs	GMP01A	6.0 to 13.5	NA	0.1
	GMP02A	6.0 to 13.5	NA	0.1
	GMP03	6.0 to 13.5	NA	0.1
	GMP04A	6.0 to 13.5	NA	0.1
	GMP05B	6.0 to 12.5	NA	0.1
	GMP06B	6.0 to 13.5	NA	0.1
	GMP07A	6.0 to 13.5	NA	0.1
	GMP08A	4.5 to 9.5	NA	0.1
	GMP09	6.0 to 9.5	NA	0.1
	GMP10	4.0 to 6.5	NA	0.1
	GMP11A	4.0 to 5.5	NA	0.1
	GMP12	5.0 to 13.0	NA	0.1
	GMP20	3.5 to 4.5	NA	0.1
	GMP21	3.5 to 4.5	NA	0.1
UCSF Compound GMPs	GMP22	6.0 to 13.5	NA	0.1
	GMP23	6.0 to 13.5	NA	0.1
	GMP24	6.0 to 13.0	NA	0.1
	GMP25	6.5 to 11.5	NA	0.1
	GMP26	6.5 to 11.5	NA	0.1
Crisp Avenue GMPs	GMP13	6.0 to 12.0	NA	0.1
	GMP14	6.0 to 10.0	NA	0.1
	GMP15	6.0 to 12.0	NA	0.1
	GMP16	5.0 to 10.0	NA	0.1
	GMP17	6.0 to 10.0	NA	0.1
	GMP18	6.0 to 12.0	NA	0.1
	GMP19	4.5 to 5.5	NA	0.1
	GMP27	4.7 to 22.2	9.41	0.1
	GMP28	6.2 to 21.2	13.65	0.1
	GMP29	6.2 to 18.7	11.86	0.1
	GMP30	4.5 to 17.0	10.79	0.1
	GMP31	6.0 to 16.0	10.67	0.1
	GMP32	4.75 to 14.75	10.32	0.1

TABLE 4: NMOC CONCENTRATIONS, JANUARY 23, 2006 (continued)

Monthly Landfill Gas Monitoring Report for January 2006, Post-Removal Action,
Parcel E-2 Industrial Landfill, Hunters Point Shipyard, San Francisco, California

Location	Monitoring Location ID Number	Screened Interval (feet bgs)	Depth to Water (feet bgs)	NMOC Concentration on January 23, 2006 (parts per million)
Ambient Air Locations	Light Pole	NA	NA	0.1
	Ground Surface Along Fence	NA	NA	0.1
	Basketball Court	NA	NA	0.1
Occupied Structure	Building 830 Crawlspace	NA	NA	0.1
On-Site Utilities[a]	DP1	NA	NA	0.1
	DP2	NA	NA	0.1
Passive Vents	PV-01 Influent	NA	NA	0.1
	PV-01 Carbon 1	NA	NA	0.1
	PV-01 Hydrosil	NA	NA	0.1
	PV-02 Influent	NA	NA	0.1
	PV-02 Carbon 1	NA	NA	0.1
	PV-02 Hydrosil	NA	NA	0.1
	PV-03 Influent	NA	NA	0.1
	PV-03 Carbon 1	NA	NA	0.1
	PV-03 Hydrosil	NA	NA	0.1
	PV-04 Influent	NA	NA	0.1
	PV-04 Carbon 1	NA	NA	0.1
	PV-04 Hydrosil	NA	NA	0.1
	PV-05 Influent	NA	NA	0.1
	PV-05 Carbon 1	NA	NA	0.1
	PV-05 Hydrosil	NA	NA	0.1

Notes:

** Monitoring performed on December 5 was precautionary in nature.

a EW108, EW122, EV122, EW134, EV134, EW138, EV138, EW142, EV142, EW146, EV146, EW150, EV150, EW154, EW158, and EV158 were excavated and removed between September 2005 and January 2006, and are no longer monitored.

bgs below ground surface
DP discharge point
GMP gas monitoring probe
NA not applicable
ppm parts per million
PV passive vent
UCSF University of California, San Francisco

Data from additional (landfill cap) monitoring locations are shown in Appendix B

TABLE 5: OXYGEN CONCENTRATIONS, JANUARY 23, 2006

Monthly Landfill Gas Monitoring Report for January 2006, Post-Removal Action,
Parcel E-2 Industrial Landfill, Hunters Point Shipyard, San Francisco, California

Location	Monitoring Location ID Number	Screened Interval (feet bgs)	Depth to Water (feet bgs)	Oxygen Concentration on January 23, 2006 (percent by volume)
Fence Line GMPs	GMP01A	6.0 to 13.5	NA	0.0
	GMP02A	6.0 to 13.5	NA	6.5
	GMP03	6.0 to 13.5	NA	15.9
	GMP04A	6.0 to 13.5	NA	17.7
	GMP05B	6.0 to 12.5	NA	10.3
	GMP06B	6.0 to 13.5	NA	18.3
	GMP07A	6.0 to 13.5	NA	0.0
	GMP08A	4.5 to 9.5	NA	0.2
	GMP09	6.0 to 9.5	NA	14.7
	GMP10	4.0 to 6.5	NA	18.7
	GMP11A	4.0 to 5.5	NA	6.4
	GMP12	5.0 to 13.0	NA	0.0
	GMP20	3.5 to 4.5	NA	19.4
	GMP21	3.5 to 4.5	NA	20.4
UCSF Compound GMPs	GMP22	6.0 to 13.5	NA	0.2
	GMP23	6.0 to 13.5	NA	0.5
	GMP24	6.0 to 13.0	NA	0.0
	GMP25	6.5 to 11.5	NA	0.0
	GMP26	6.5 to 11.5	NA	15.2
Crisp Avenue GMPs	GMP13	6.0 to 12.0	NA	16.0
	GMP14	6.0 to 10.0	NA	20.0
	GMP15	6.0 to 12.0	NA	17.5
	GMP16	5.0 to 10.0	NA	19.4
	GMP17	6.0 to 10.0	NA	18.4
	GMP18	6.0 to 12.0	NA	17.8
	GMP19	4.5 to 5.5	NA	19.9
	GMP27	4.7 to 22.2	9.41	18.2
	GMP28	6.2 to 21.2	13.65	16.8
	GMP29	6.2 to 18.7	11.86	16.9
	GMP30	4.5 to 17.0	10.79	18.1
	GMP31	6.0 to 16.0	10.67	19.5
	GMP32	4.75 to 14.75	10.32	20.1

TABLE 5: OXYGEN CONCENTRATIONS, JANUARY 23, 2006 (continued)

Monthly Landfill Gas Monitoring Report for January 2006, Post-Removal Action,
Parcel E-2 Industrial Landfill, Hunters Point Shipyard, San Francisco, California

Location	Monitoring Location ID Number	Screened Interval (feet bgs)	Depth to Water (feet bgs)	Oxygen Concentration on January 23, 2006 (percent by volume)
Ambient Air Locations	Light Pole	NA	NA	20.8
	Ground Surface Along Fence	NA	NA	20.7
	Basketball Court	NA	NA	20.8
Occupied Structure	Building 830 Crawlspace	NA	NA	20.8
On-Site Utilities[a]	DP1	NA	NA	21.0
	DP2	NA	NA	20.8
Passive Vents	PV-01 Influent	NA	NA	0.1
	PV-01 Carbon 1	NA	NA	0.1
	PV-01 Hydrosil	NA	NA	6.2
	PV-02 Influent	NA	NA	0.0
	PV-02 Carbon 1	NA	NA	0.2
	PV-02 Hydrosil	NA	NA	4.5
	PV-03 Influent	NA	NA	19.4
	PV-03 Carbon 1	NA	NA	19.2
	PV-03 Hydrosil	NA	NA	20.9
	PV-04 Influent	NA	NA	19.1
	PV-04 Carbon 1	NA	NA	19.3
	PV-04 Hydrosil	NA	NA	20.5
	PV-05 Influent	NA	NA	0.0
	PV-05 Carbon 1	NA	NA	0.0
	PV-05 Hydrosil	NA	NA	0.0

Notes:

** Monitoring performed on December 5 was precautionary in nature.

[a] EW108, EW122, EV122, EW134, EV134, EW138, EV138, EW142, EV142, EW146, EV146, EW150, EV150, EW154, EW158, and EV158 were excavated and removed between September 2005 and January 2006, and are no longer monitored.

bgs below ground surface
DP discharge point
GMP gas monitoring probe
NA not applicable
PV passive vent
UCSF University of California, San Francisco

Data from additional (landfill cap) monitoring locations are shown in Appendix B

TABLE 6: CARBON DIOXIDE CONCENTRATIONS, JANUARY 23, 2006

Monthly Landfill Gas Monitoring Report for January 2006, Post-Removal Action,
Parcel E-2 Industrial Landfill, Hunters Point Shipyard, San Francisco, California

Location	Monitoring Location ID Number	Screened Interval (feet bgs)	Depth to Water (feet bgs)	Carbon Dioxide Concentration on January 23, 2006 (percent by volume)
Fence Line GMPs	GMP01A	6.0 to 13.5	NA	10.2
	GMP02A	6.0 to 13.5	NA	5.4
	GMP03	6.0 to 13.5	NA	2.4
	GMP04A	6.0 to 13.5	NA	2.2
	GMP05B	6.0 to 12.5	NA	1.1
	GMP06B	6.0 to 13.5	NA	1.3
	GMP07A	6.0 to 13.5	NA	12.2
	GMP08A	4.5 to 9.5	NA	2.5
	GMP09	6.0 to 9.5	NA	1.8
	GMP10	4.0 to 6.5	NA	0.7
	GMP11A	4.0 to 5.5	NA	5.4
	GMP12	5.0 to 13.0	NA	7.5
	GMP20	3.5 to 4.5	NA	3.1
	GMP21	3.5 to 4.5	NA	1.2
UCSF Compound GMPs	GMP22	6.0 to 13.5	NA	9.7
	GMP23	6.0 to 13.5	NA	14.4
	GMP24	6.0 to 13.0	NA	11.3
	GMP25	6.5 to 11.5	NA	8.7
	GMP26	6.5 to 11.5	NA	2.3
Crisp Avenue GMPs	GMP13	6.0 to 12.0	NA	0.9
	GMP14	6.0 to 10.0	NA	0.3
	GMP15	6.0 to 12.0	NA	1.3
	GMP16	5.0 to 10.0	NA	0.1
	GMP17	6.0 to 10.0	NA	0.2
	GMP18	6.0 to 12.0	NA	0.4
	GMP19	4.5 to 5.5	NA	0.0
	GMP27	4.7 to 22.2	9.41	0.6
	GMP28	6.2 to 21.2	13.65	1.0
	GMP29	6.2 to 18.7	11.86	1.6
	GMP30	4.5 to 17.0	10.79	0.6
	GMP31	6.0 to 16.0	10.67	0.1
	GMP32	4.75 to 14.75	10.32	0.1

TABLE 6: CARBON DIOXIDE CONCENTRATIONS, JANUARY 23, 2006 (continued)

Monthly Landfill Gas Monitoring Report for January 2006, Post-Removal Action, Parcel E-2 Industrial Landfill, Hunters Point Shipyard, San Francisco, California

Location	Monitoring Location ID Number	Screened Interval (feet bgs)	Depth to Water (feet bgs)	Carbon Dioxide Concentration on January 23, 2006 (percent by volume)
Ambient Air Locations	Light Pole	NA	NA	0.0
	Ground Surface Along Fence	NA	NA	0.0
	Basketball Court	NA	NA	0.0
Occupied Structure	Building 830 Crawlspace	NA	NA	0.0
On-Site Utilities[a]	DP1	NA	NA	0.0
	DP2	NA	NA	0.0
Passive Vents	PV-01 Influent	NA	NA	23.7
	PV-01 Carbon 1	NA	NA	24.3
	PV-01 Hydrosil	NA	NA	14.2
	PV-02 Influent	NA	NA	25.5
	PV-02 Carbon 1	NA	NA	25.6
	PV-02 Hydrosil	NA	NA	20.2
	PV-03 Influent	NA	NA	2.0
	PV-03 Carbon 1	NA	NA	2.2
	PV-03 Hydrosil	NA	NA	0.4
	PV-04 Influent	NA	NA	0.7
	PV-04 Carbon 1	NA	NA	0.3
	PV-04 Hydrosil	NA	NA	0.0
	PV-05 Influent	NA	NA	28.5
	PV-05 Carbon 1	NA	NA	28.5
	PV-05 Hydrosil	NA	NA	32.1

Notes:

** Monitoring performed on December 5 was precautionary in nature.

[a] EW108, EW122, EV122, EW134, EV134, EW138, EV138, EW142, EV142, EW146, EV146, EW150, EV150, EW154, EW158, and EV158 were excavated and removed between September 2005 and January 2006, and are no longer monitored.

bgs below ground surface
DP discharge point
GMP gas monitoring probe
NA not applicable
PV passive vent
UCSF University of California, San Francisco

Data from additional (landfill cap) monitoring locations are shown in Appendix B

TABLE 7: PROBE PRESSURES AT GMPS, JANUARY 23, 2006

Monthly Landfill Gas Monitoring Report for January 2006, Post-Removal Action,
Parcel E-2 Industrial Landfill, Hunters Point Shipyard, San Francisco, California

Location	Monitoring Location Identification Number	Screened Interval (feet bgs)	Probe Pressure (inches of water)
Fence Line GMPs	GMP01A	6.0 to 13.5	0.0
	GMP02A	6.0 to 13.5	0.0
	GMP03	6.0 to 13.5	0.0
	GMP04A	6.0 to 13.5	0.0
	GMP05B	6.0 to 12.5	0.0
	GMP06B	6.0 to 13.5	0.0
	GMP07A	6.0 to 13.5	0.0
	GMP08A	4.5 to 9.5	0.0
	GMP09	6.0 to 9.5	0.0
	GMP10	4.0 to 6.5	0.0
	GMP11A	4.0 to 5.5	0.0
	GMP12	5.0 to 13.0	0.0
	GMP20	3.5 to 4.5	0.0
	GMP21	3.5 to 4.5	0.0
UCSF Compound GMPs	GMP22	6.0 to 13.5	0.0
	GMP23	6.0 to 13.5	0.0
	GMP24	6.0 to 13.0	0.0
	GMP25	6.5 to 11.5	0.0
	GMP26	6.5 to 11.5	0.0
Crisp Avenue GMPs	GMP13	6.0 to 12.0	0.0
	GMP14	6.0 to 10.0	0.0
	GMP15	6.0 to 12.0	0.0
	GMP16	5.0 to 10.0	0.0
	GMP17	6.0 to 10.0	0.0
	GMP18	6.0 to 12.0	0.0
	GMP19	4.5 to 5.5	0.0
	GMP27	4.7 to 22.2	0.0
	GMP28	6.2 to 21.2	0.0
	GMP29	6.2 to 18.7	0.0
	GMP30	4.5 to 17.0	0.0
	GMP31	6.0 to 16.0	0.0
	GMP32	4.75 to 14.75	0.0

Notes:
bgs below ground surface
GMP gas monitoring probe
UCSF University of California, San Francisco

TABLE 8: GROUNDWATER ELEVATIONS, JANUARY 23, 2006

Monthly Landfill Gas Monitoring Report for January 2006, Post-Removal Action,
Parcel E-2 Industrial Landfill, Hunters Point Shipyard, San Francisco, California

Monitoring Location ID Number	Top of Casing Elevation (feet above msl)	Ground Surface Elevation (feet above msl)	Depth to Water (feet btoc)	Depth to Water (feet bgs)	Groundwater Elevation (feet above msl)
GMP27	21.66	22.15	8.92	9.41	12.74
GMP28	20.17	20.71	13.11	13.65	7.06
GMP29	18.48	18.92	11.42	11.86	7.06
GMP30	16.62	17.06	10.35	10.79	6.27
GMP31	15.34	15.78	10.23	10.67	5.11
GMP32	14.02	14.59	9.75	10.32	4.27
IR01MW02B	20.61	19.16	13.51	12.06	7.10
IR01MW03A	19.89	19.46	13.23	12.80	6.66
IR01MW05A	22.56	20.44	16.43	14.31	6.13
IR01MW10A	13.75	13.93	7.45	7.63	6.30
IR01MW11A	17.96	15.90	11.62	9.56	6.34
IR01MW12A	18.25	16.28	12.25	10.28	6.00
IR01P03AA	21.86	19.70	15.67	13.51	6.19
IR01P03AB	19.87	20.47	12.72	13.32	7.15
IR01P04A	21.61	19.29	15.47	13.15	6.14
IR74MW01A	13.16	13.88	10.57	11.29	2.59
IR76MW13A	19.69	20.04	11.71	12.06	7.98

Notes:

bgs	below ground surface
btoc	below top of casing
GMP	gas monitoring probe
IR	Installation Restoration
msl	mean sea level
MW	monitoring well

TABLE 9: DAILY METEOROLOGICAL DATA, JANUARY 2006

Monthly Landfill Gas Monitoring Report for January 2006, Post-Removal Action,
Parcel E-2 Industrial Landfill, Hunters Point Shipyard, San Francisco, California

Date	Wind Speed (mph)	Wind Direction (degrees)	Standard Deviation of Wind Direction (degrees)	Air Temperature (°F)	Relative Humidity (%)	Daily Precipitation (inches)	Dew Point (°F)	Barometric Pressure (in. mercury)	Cumulative Precipitation (inches)*
1/1/2006	13.31	155.6	17.58	54.64	79.77	0.02	45.93	29.66	0.02
1/2/2006	6.49	233.4	27.93	52.90	89.30	0.47	46.47	29.64	0.49
1/3/2006	9.64	154.8	13.53	52.43	82.36	0.04	44.62	30.15	0.53
1/4/2006	5.01	131.7	32.49	56.35	76.10	0.00	46.47	30.30	0.53
1/5/2006	3.63	132.8	38.75	54.72	79.82	0.00	45.91	30.27	0.53
1/6/2006	3.32	208.3	43.75	53.12	85.36	0.00	45.72	30.05	0.53
1/7/2006	7.19	256.3	27.27	54.70	87.57	0.07	47.71	30.12	0.60
1/8/2006	4.24	272.2	29.51	51.12	74.32	0.01	41.39	30.26	0.61
1/9/2006	3.15	237.5	27.51	49.81	78.98	0.00	41.14	30.26	0.61
1/10/2006	2.56	156.1	48.89	49.43	91.25	0.00	43.79	30.20	0.61
1/11/2006	6.31	214.7	18.81	53.45	89.48	0.05	46.98	30.09	0.66
1/12/2006	3.64	155.1	33.07	51.36	85.75	0.00	44.25	30.09	0.66
1/13/2006	6.34	155.0	34.04	53.38	75.94	0.00	43.80	29.89	0.66
1/14/2006	11.29	241.9	14.74	51.05	80.91	0.18	43.03	29.87	0.84
1/15/2006	5.93	220.3	24.75	48.73	61.52	0.00	36.16	30.27	0.84
1/16/2006	2.94	164.8	35.45	49.44	75.74	0.00	40.36	30.40	0.84
1/17/2006	5.14	154.2	30.88	51.33	81.06	0.11	43.25	30.27	0.95
1/18/2006	9.71	263.6	16.11	52.79	81.51	0.05	44.68	30.11	1.00
1/19/2006	4.57	241.0	27.01	49.02	75.24	0.00	39.79	30.21	1.00
1/20/2006	3.50	175.4	31.98	48.42	82.01	0.00	40.86	30.27	1.00

TABLE 9: DAILY METEOROLOGICAL DATA, JANUARY 2006 (continued)

Monthly Landfill Gas Monitoring Report for January 2006, Post-Removal Action,
Parcel E-2 Industrial Landfill, Hunters Point Shipyard, San Francisco, California

Date	Wind Speed (mph)	Wind Direction (degrees)	Standard Deviation of Wind Direction (degrees)	Air Temperature (°F)	Relative Humidity (%)	Daily Precipitation (inches)	Dew Point (°F)	Barometric Pressure (in. mercury)	Cumulative Precipitation (inches)*
1/21/2006	4.49	133.5	24.02	50.06	89.08	0.11	43.88	30.25	1.11
1/22/2006	4.10	268.6	35.45	51.77	66.68	0.00	38.97	30.25	1.11
1/23/2006	2.94	204.1	49.06	53.11	52.71	0.00	36.89	30.17	1.11
1/24/2006	2.75	190.4	41.58	53.09	65.34	0.00	40.74	30.02	1.11
1/25/2006	6.18	208.4	33.48	51.32	80.75	0.00	43.18	30.02	1.11
1/26/2006	5.34	247.9	28.54	50.45	68.70	0.00	39.52	30.19	1.11
1/27/2006	6.07	217.5	28.45	50.59	82.16	0.04	42.92	30.26	1.15
1/28/2006	8.64	178.9	18.92	52.34	86.83	0.12	45.49	30.24	1.27
1/29/2006	3.94	238.0	30.25	53.16	79.39	0.00	44.39	30.22	1.27
1/30/2006	7.62	206.5	23.38	52.51	85.67	0.05	45.40	30.11	1.32
1/31/2006	4.23	234.0	31.85	49.31	79.96	0.00	41.24	30.16	1.32

Notes:

Daily meteorological data are averages of hourly data except for daily precipitation, which is the sum of hourly precipitation data, and cumulative precipitation, which is the season-to-date total at the end of each day.

* Cumulative Precipitation is based on a January–December season.

in.	inches
mph	miles per hour
°F	degrees Fahrenheit
%	percent
NA	not available

TABLE 10: MONTHLY METEOROLOGICAL SUMMARY

Monthly Landfill Gas Monitoring Report for January 2006, Post-Removal Action,
Parcel E-2 Industrial Landfill, Hunters Point Shipyard, San Francisco, California

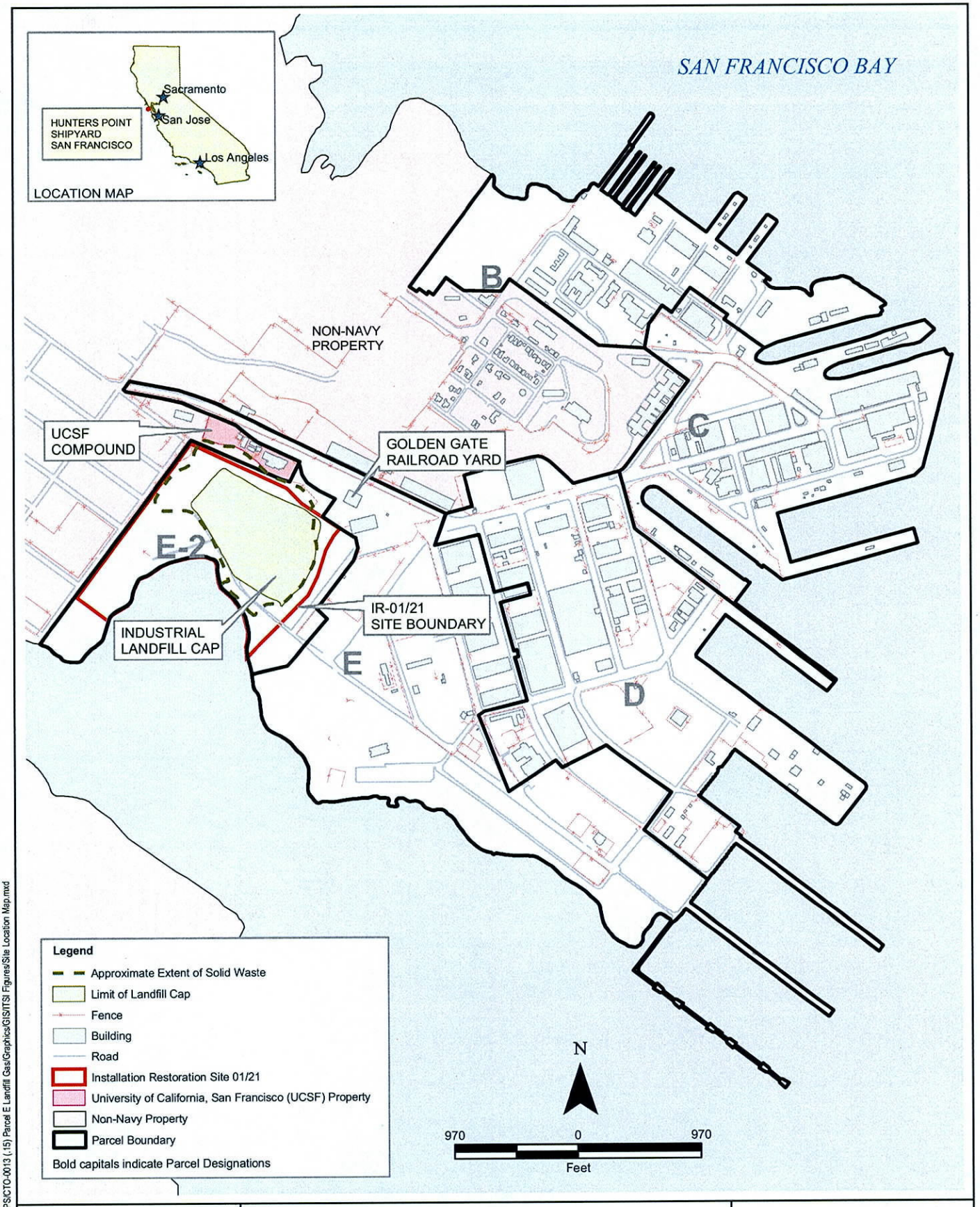
Date	Wind Speed (mph)	Wind Direction (degrees)	Standard Deviation of Wind Direction (degrees)	Air Temperature (°F)	Relative Humidity (%)	Monthly Precipitation (inches)	Dew Point (°F)	Barometric Pressure (in. mercury)	Cumulative Precipitation (inches)*
December 2004	5.77	160.12	25.66	51.61	77.01	3.31	42.24	30.03	8.17
January 2005	5.98	163.91	24.35	48.92	81.72	2.16	41.27	30.02	2.16
February 2005	5.49	171.43	23.91	54.23	76.68	2.36	44.55	29.96	4.52
March 2005	8.07	230.53	21.56	56.16	73.68	2.24	45.28	30.01	6.76
April 2005	9.48	249.49	18.08	55.06	70.23	0.88	43.71	30.02	7.64
May 2005	10.62	265.49	14.84	58.95	76.46	0.62	48.75	29.95	8.26
June 2005	13.53	263.21	14.36	60.12	73.38	0.28	49.58	29.91	8.54
July 2005	11.74	278.68	12.12	59.97	81.19	0.00	50.75	29.89	8.54
August 2005	10.51	276.86	13.46	58.93	82.12	0.00	49.94	29.90	8.54
September 2005	9.44	264.84	17.11	58.66	79.43	0.00	49.08	29.95	8.54
October 2005	7.83	250.26	19.11	58.38	76.84	0.09	47.99	29.98	8.63
November 2005	5.56	212.30	30.22	56.84	72.96	0.85	45.72	30.08	9.48
December 2005	6.54	185.35	26.62	53.45	80.60	4.84	44.86	30.08	14.32
January 2006	5.62	201.70	29.65	51.80	79.07	1.32	43.06	30.14	1.32

Notes:
Monthly meteorological data are averages of hourly measurements except for monthly precipitation, which is the sum of hourly precipitation data, and cumulative precipitation, which is the season-to-date total on the last day of each month.

* Cumulative Precipitation is calculated based on a calendar-year (i.e., January–December) season.

in.	inches
mph	miles per hour
°F	degrees Fahrenheit
%	percent

FIGURES

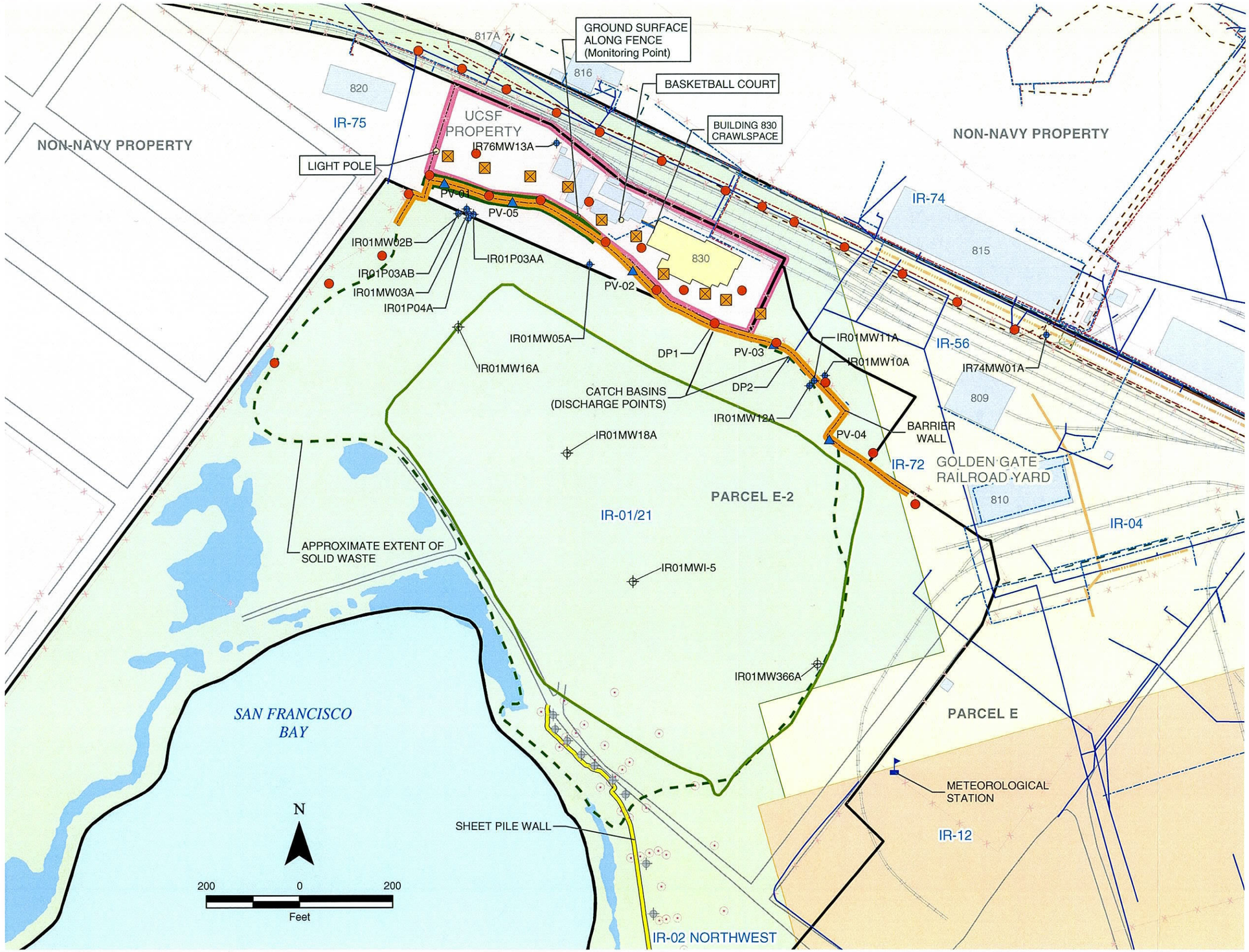


2002/02-125 Navy HPS/CTO-0013 (-15) Parcel E Landfill Gas/Graphics/GIS/ITSI Figures/Site Location Map.mxd

ITSI Innovative Technical Solutions, Inc.

Monthly Landfill Gas Monitoring Report
Hunters Point Shipyard
San Francisco, California

FIGURE 1
Site Location Map



Legend

- Catch Basin
- Gas Monitoring Probe
- Extraction Well
- Monitoring Well with Water Level Measurement
- Other Monitoring Well
- Passive Vent
- Groundwater Extraction System Well/Vault
- Former Location of Groundwater Extraction System Well/Vault
- Grouted Section of HDPE Barrier Wall
- Groundwater Extraction System Piezometer
- HDPE Barrier Wall and Extraction Trench
- Meteorological Station
- Surface/Building Air Monitoring Location
- Limit of Landfill Cap
- Approximate Extent of Solid Waste
- Sheet Pile Wall
- Storm Water Line
- Water Line
- Saltwater Line
- Steam Line
- Sanitary Sewer Line
- Electric Line
- Gas Line
- Fence Line
- Parcel Boundary
- Wetland (Surveyed in October 2001)
- Building
- Road
- Rail Line
- UCSF Property
- Non-Navy Property
- Industrial
- Open Space
- Research and Development
- Residential

Notes:

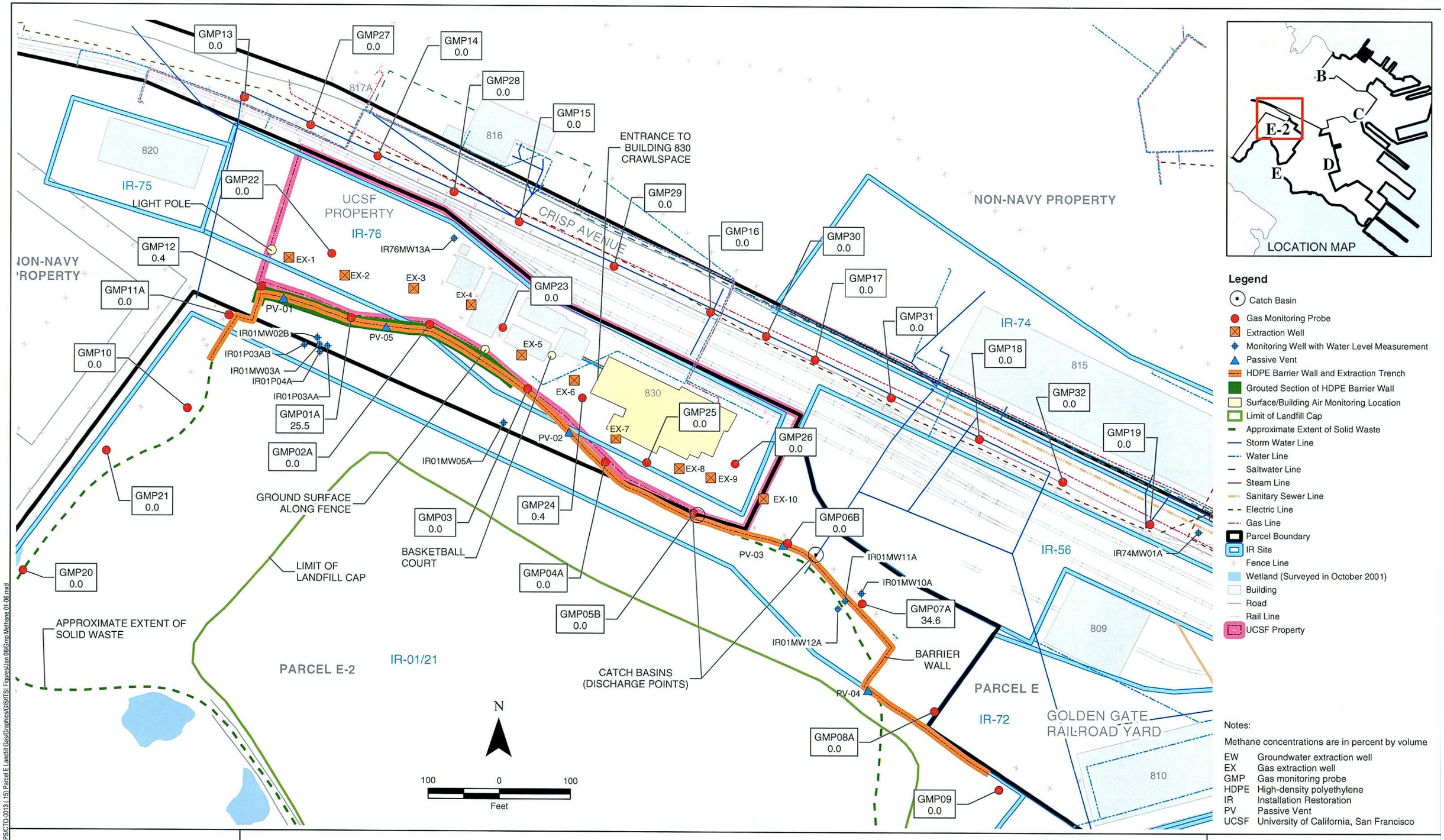
EW	Groundwater extraction well
EX	Gas extraction well
GMP	Gas monitoring probe
HDPE	High-density polyethylene
IR	Installation Restoration
PV	Passive Vent
UCSF	University of California, San Francisco

2002/02-125 Navy HPS/CTO-0013 (.15) Parcel E Landfill Gas/Graphics/GIS/ITSI Figures/Landfill Gas.mxd

Innovative Technical Solutions, Inc.

Monthly Landfill Gas Monitoring Report
Hunters Point Shipyard
San Francisco, California

FIGURE 2
Site Map and
Landfill Gas Monitoring Locations



Notes:

Methane concentrations are in percent by volume

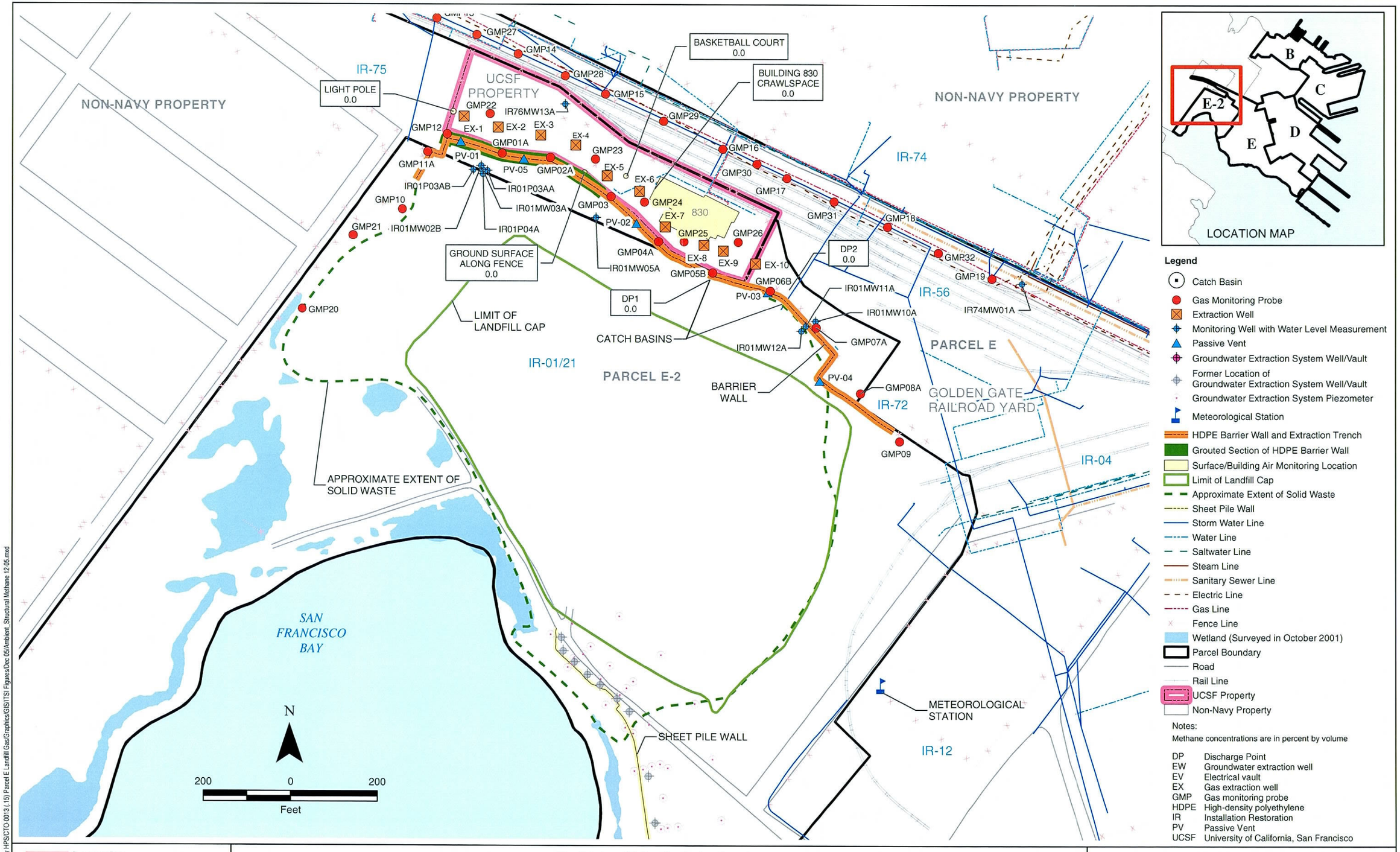
EW	Groundwater extraction well
EX	Gas extraction well
GMP	Gas monitoring probe
HDPE	High-density polyethylene
IR	Installation Restoration
PV	Passive Vent
UCSF	University of California, San Francisco

2002/02-125 Navy HPS/CTO-0013 (-15) Parcel E Landfill Gas/Graphics/GIS/ITSI Figures/Jan 06/Gmp Methane 01-06.mxd

Innovative Technical Solutions, Inc.

Monthly Landfill Gas Monitoring Report
Hunters Point Shipyard
San Francisco, California

FIGURE 3
Peak Methane Concentrations at GMPs
January 23, 2006

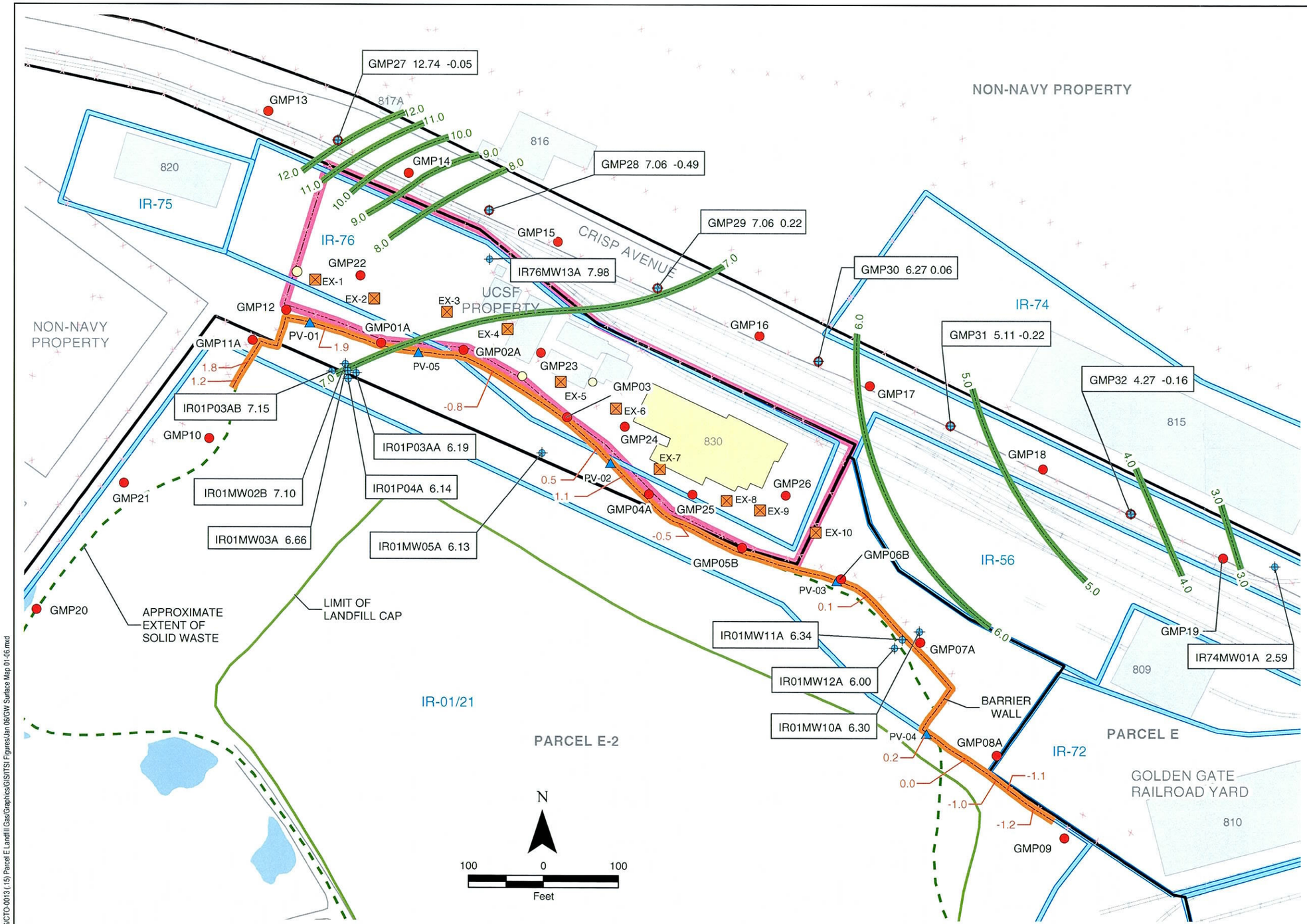


2002\02-125 Navy HPS\CTO-0013 (.15) Parcel E Landfill Gas\Graphics\GIS\ITSI Figures\Dec 05\Ambient_Structural Methane 12-05.mxd

Innovative Technical Solutions, Inc.

Monthly Landfill Gas Monitoring Report
Hunters Point Shipyard
San Francisco, California

FIGURE 4
Methane Concentrations at Ambient and Structural Locations
January 23, 2006

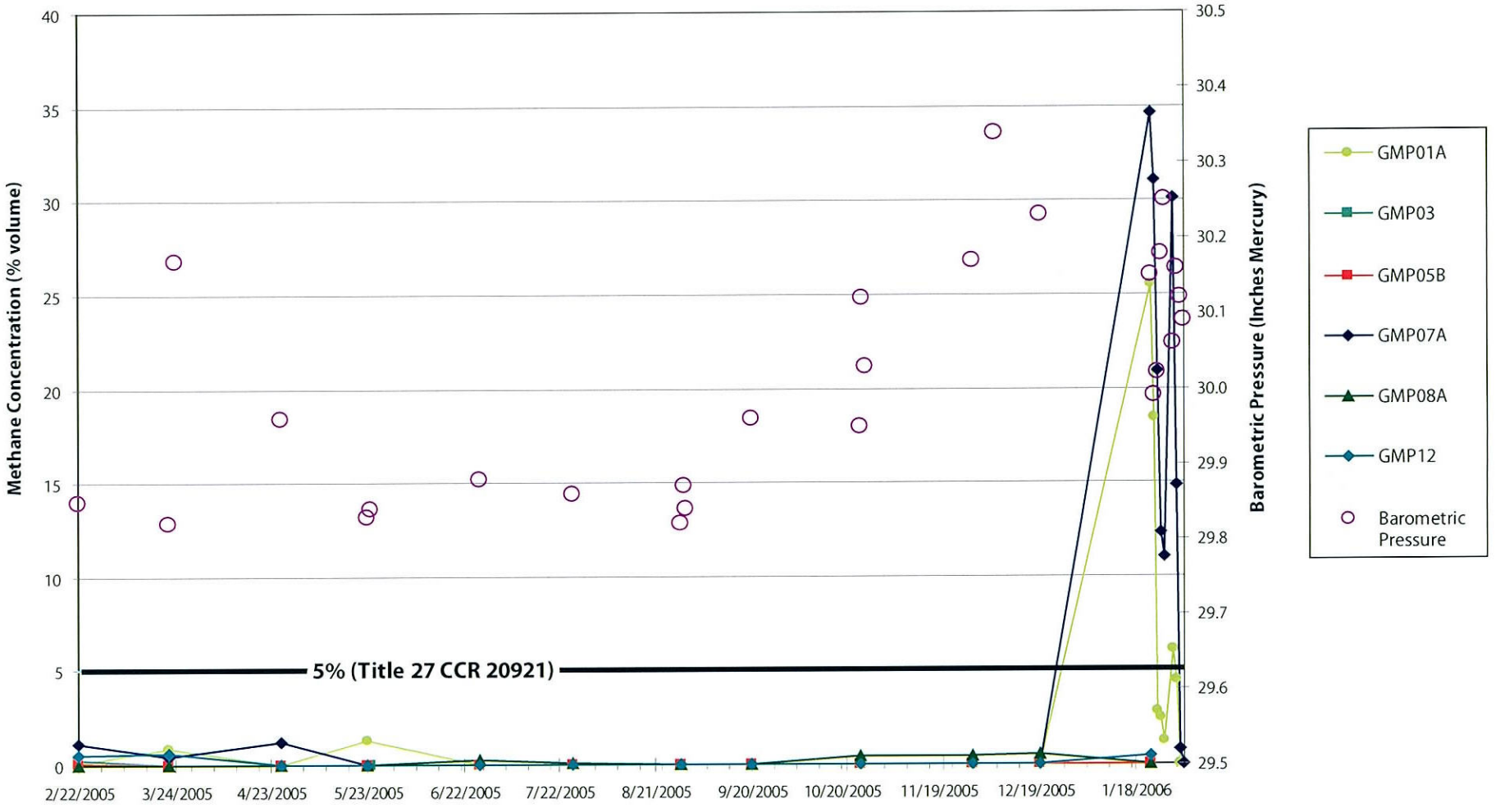


2002/02-125 Navy HPS/CTO-0013,(.15) Parcel E Landfill Gas/Graphics/GIS/ITSI Figures/Jan 06/GW Surface Map 01-06.mxd

Innovative Technical Solutions, Inc.

Monthly Landfill Gas Monitoring Report
Hunters Point Shipyard
San Francisco, California

FIGURE 5
Groundwater Potentiometric Surface Map
January 23, 2006



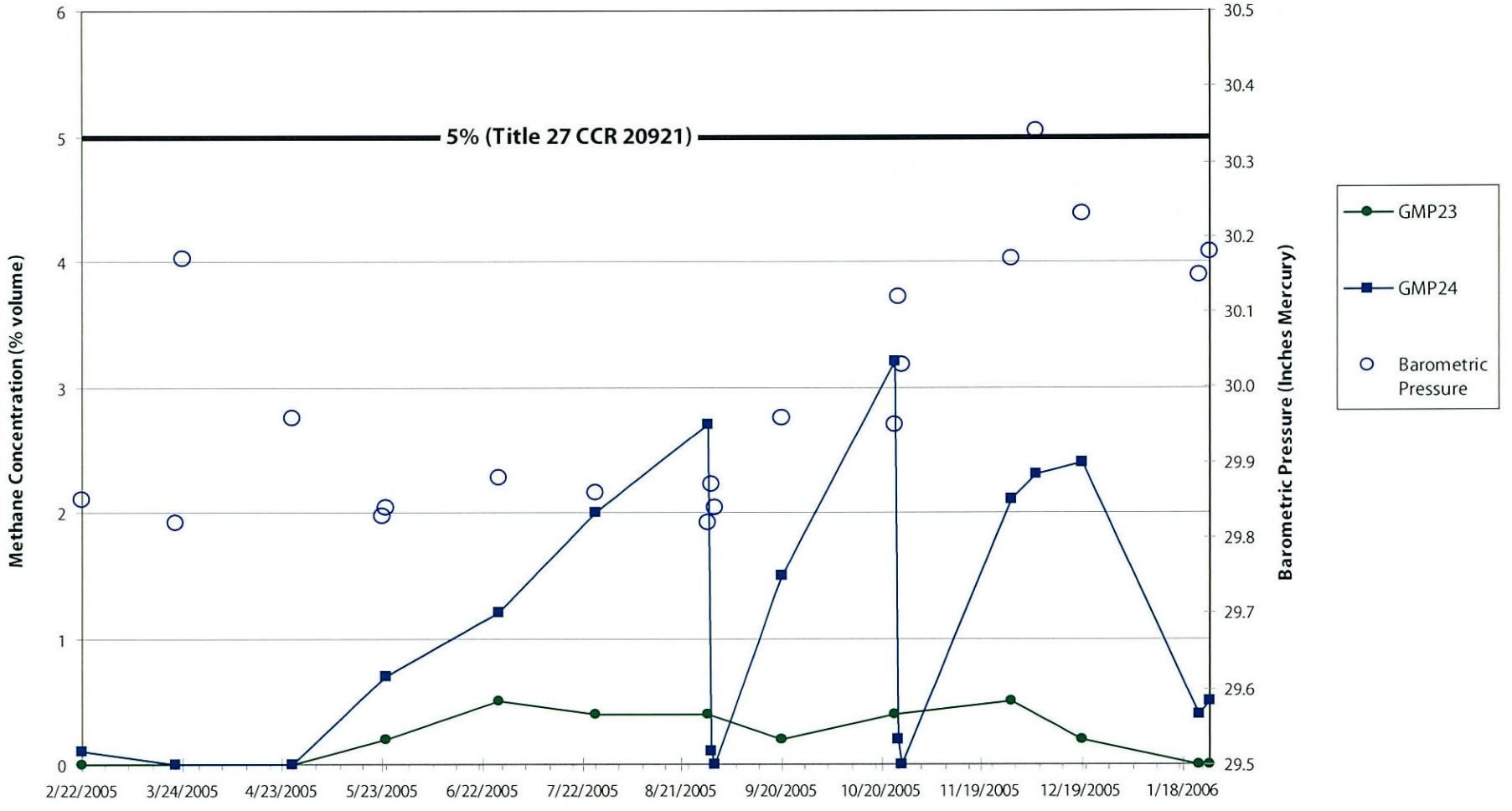
Notes: Periods of active gas extraction are specified in Section 2.2.1 of the report text.
Methane was not detected at GMP02A, GMP04A, GMP06B, GMP09, GMP10, GMP11A, GMP20, or GMP21 during the indicated interval.
For clarity of presentation, these GMPs are not plotted.
27 CCR - Title 27 of the *California Code of Regulations*
GMP - Gas Monitoring Probe

Innovative Technical Solutions, Inc.

Monthly Landfill Gas Monitoring Report
Hunters Point Shipyard
San Francisco, California

FIGURE 6
Methane Concentrations and Barometric Pressures for GMPs at the Fence Line
February 2005-January 2006

2002/02-125 Navy HPS/02-125.15 Parcel E Landfill Gas/Graphics/Monthly Reports/Dec 05/Excel Chart 6 12-05.ai



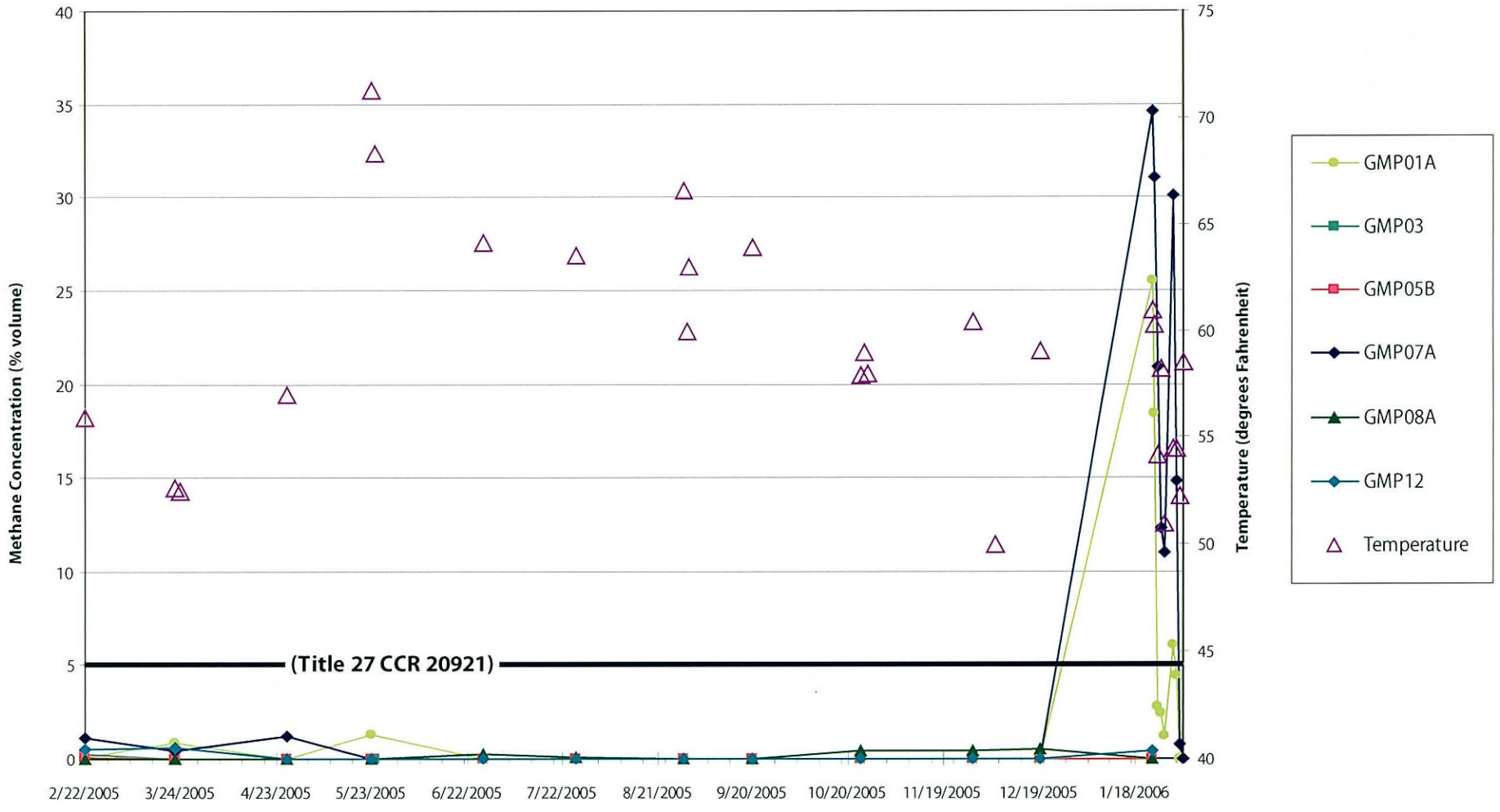
Notes: Periods of active gas extraction are specified in Section 2.2.1 of the report text.
Methane was not detected at GMP22, GMP25, or GMP26 during the indicated interval. For clarity of presentation, these GMPs are not plotted.
Followup monitoring in early August 2004 was performed only at GMP24.
27 CCR - Title 27 of the *California Code of Regulations*
GMP - Gas monitoring probe
UCSF - University of California, San Francisco

Innovative Technical Solutions, Inc.

Monthly Landfill Gas Monitoring Report
Hunters Point Shipyard
San Francisco, California

FIGURE 7
Methane Concentrations and Barometric Pressures for GMPs at the UCSF Compound
February 2005-January 2006

2002/02-125 Navy HPS/02-125.15 Parcel E Landfill Gas/Graphics/Monthly Reports/Dec 05/Excel Chart 7 12-05.ai



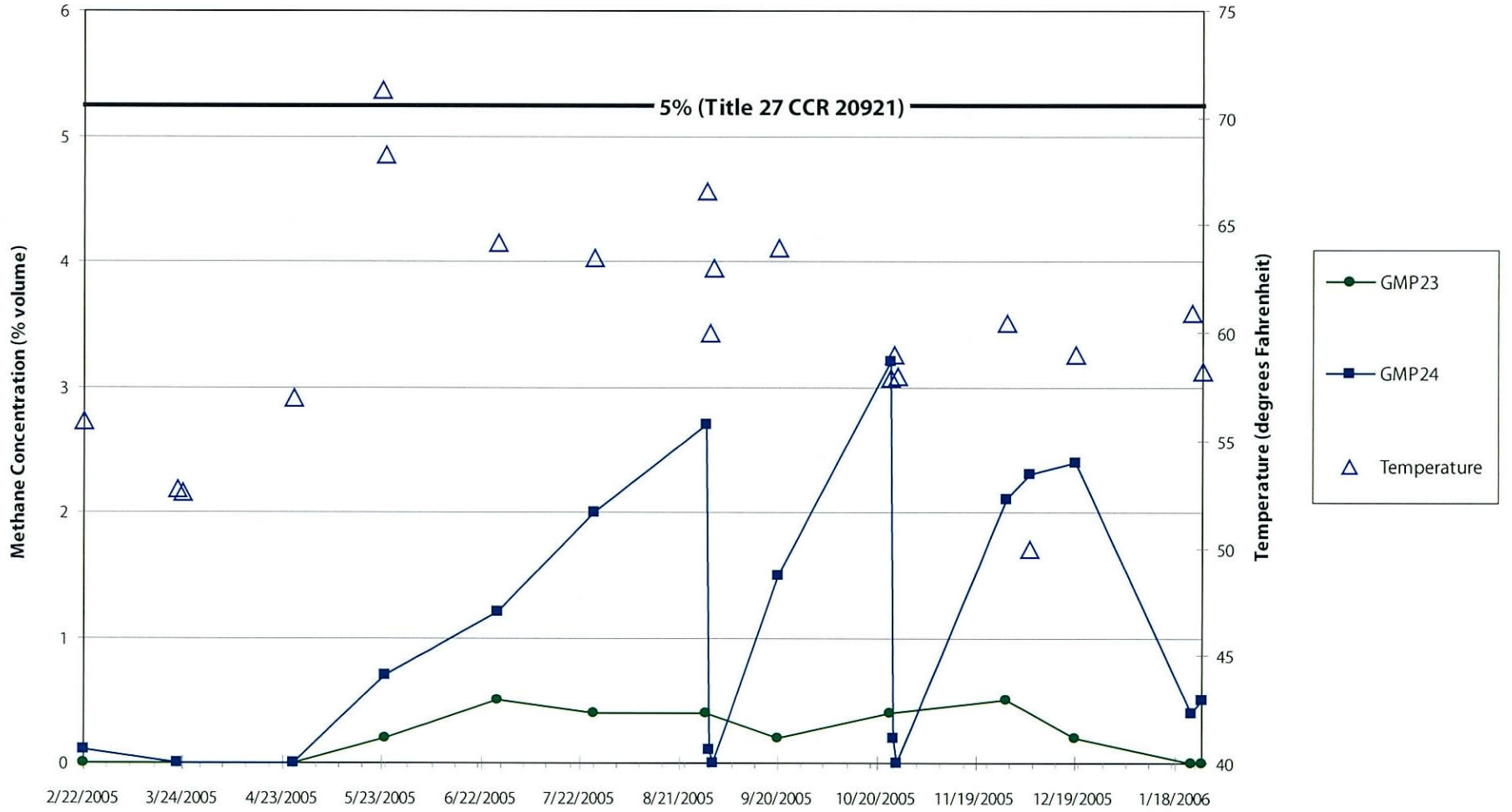
Notes: Periods of active gas extraction are specified in Section 2.2.1 of the report text.
Methane was not detected at GMP02A, GMP04A, GMP06B, GMP09, GMP10, or GMP11A, GMP20, or GMP21 during the indicated interval.
For clarity of presentation, these GMPs are not plotted.
27 CCR - Title 27 of the *California Code of Regulations*
GMP - Gas Monitoring Probe

Innovative Technical Solutions, Inc.

Monthly Landfill Gas Monitoring Report
Hunters Point Shipyard
San Francisco, California

FIGURE 8
Methane Concentrations and Temperatures for GMPs at the Fence Line
February 2005-January 2006

2002/02-125 Navy HPS/02-125.15 Parcel E Landfill Gas/Graphics/Monthly Reports/Dec 05/Excel Chart 8 12-05.ai



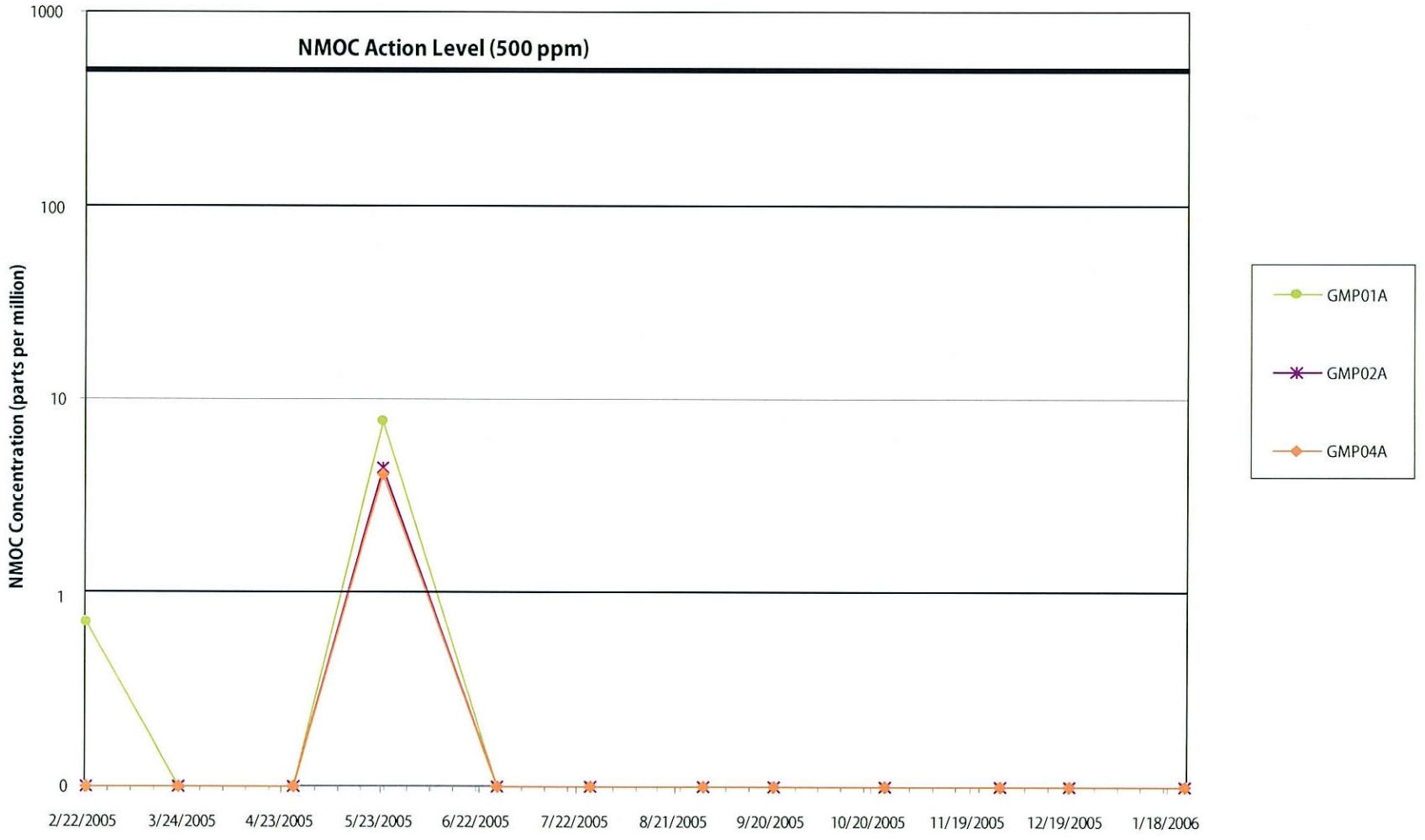
Notes: Periods of active gas extraction are specified in Section 2.2.1 of the report text.
Methane was not detected at GMP22, GMP25, or GMP26 during the indicated interval. For clarity of presentation, these GMPs are not plotted.
Followup monitoring in early August 2004 was performed only at GMP24.
27 CCR - Title 27 of the *California Code of Regulations*
GMP - Gas monitoring probe
UCSF - University of California, San Francisco

Innovative Technical Solutions, Inc.

Monthly Landfill Gas Monitoring Report
Hunters Point Shipyard
San Francisco, California

FIGURE 9
Methane Concentrations and Temperatures for GMPs at the UCSF Compound
February 2005-January 2006

2002/02-125 Navy HPS/02-125.15 Parcel E Landfill Gas/Graphics/Monthly Reports/Dec 05/Excel Chart 9 12-05.ai



Notes: Periods of active gas extraction are specified in Section 2.2.1 of the report text.
NMOCs were not detected at GMP03, GMP05B, GMP06B, GMP07A, GMP08A, GMP09, GMP10, GMP11A, GMP12, GMP20, or GMP21 during the indicated interval.
For clarity of presentation, these GMPs are not plotted.

GMP Gas monitoring probe

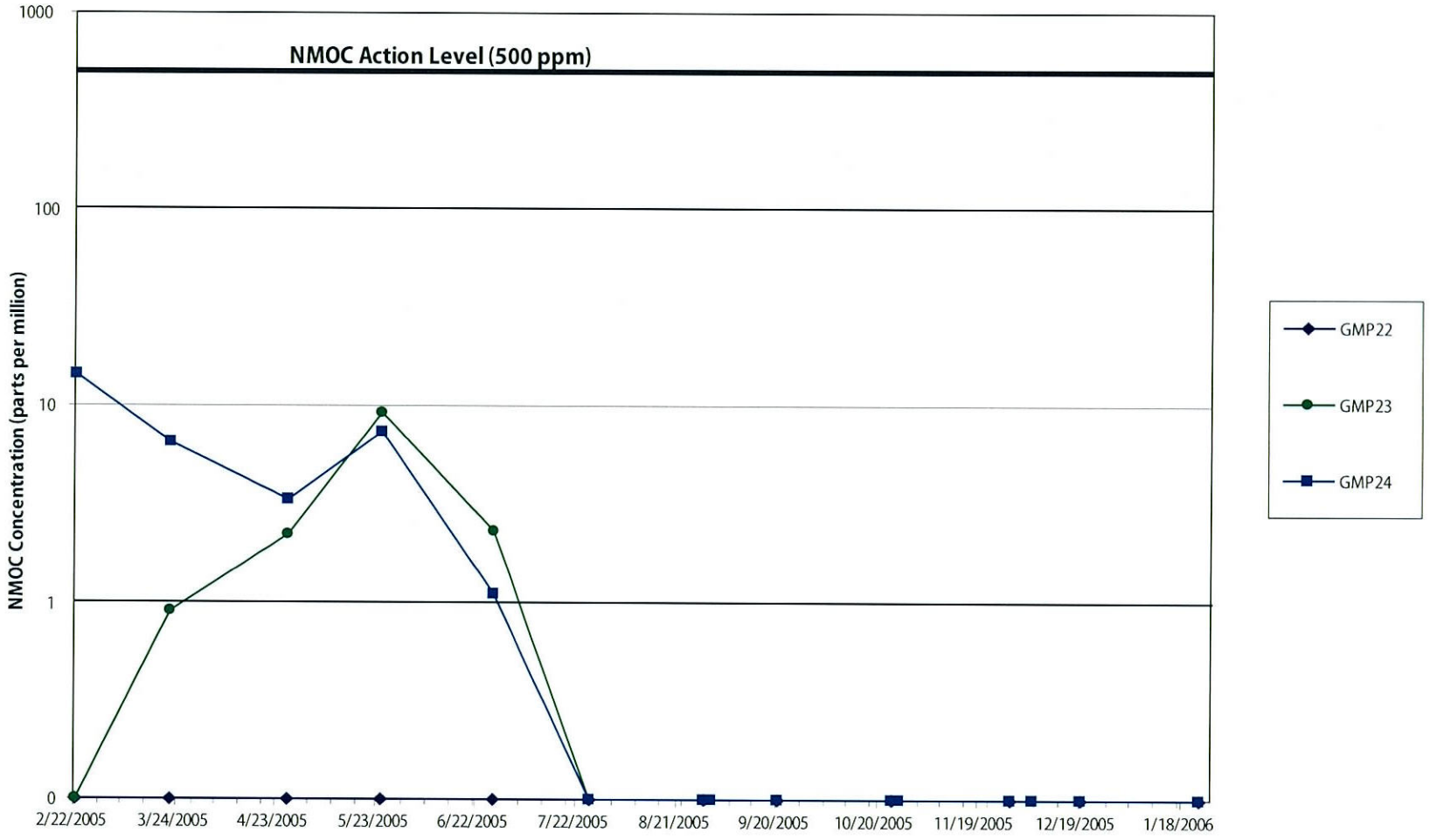
NMOC Non-Methane Organic Compounds

Innovative Technical Solutions, Inc.

Monthly Landfill Gas Monitoring Report
Hunters Point Shipyard
San Francisco, California

FIGURE 10
NMOC Concentrations for GMPs
at the Fence Line
February 2005-January 2006

2002/02-125 Navy HPS/02-125.15 Parcel E Landfill Gas/Graphics/Monthly Reports/Dec 05/Excel Chart 10 12-05.ai



Notes: Periods of active gas extraction are specified in Section 2.2.1 of the report text.
NMOCs were not detected at GMP25 or GMP26 during the indicated interval.
For clarity of presentation, these GMPs are not plotted.

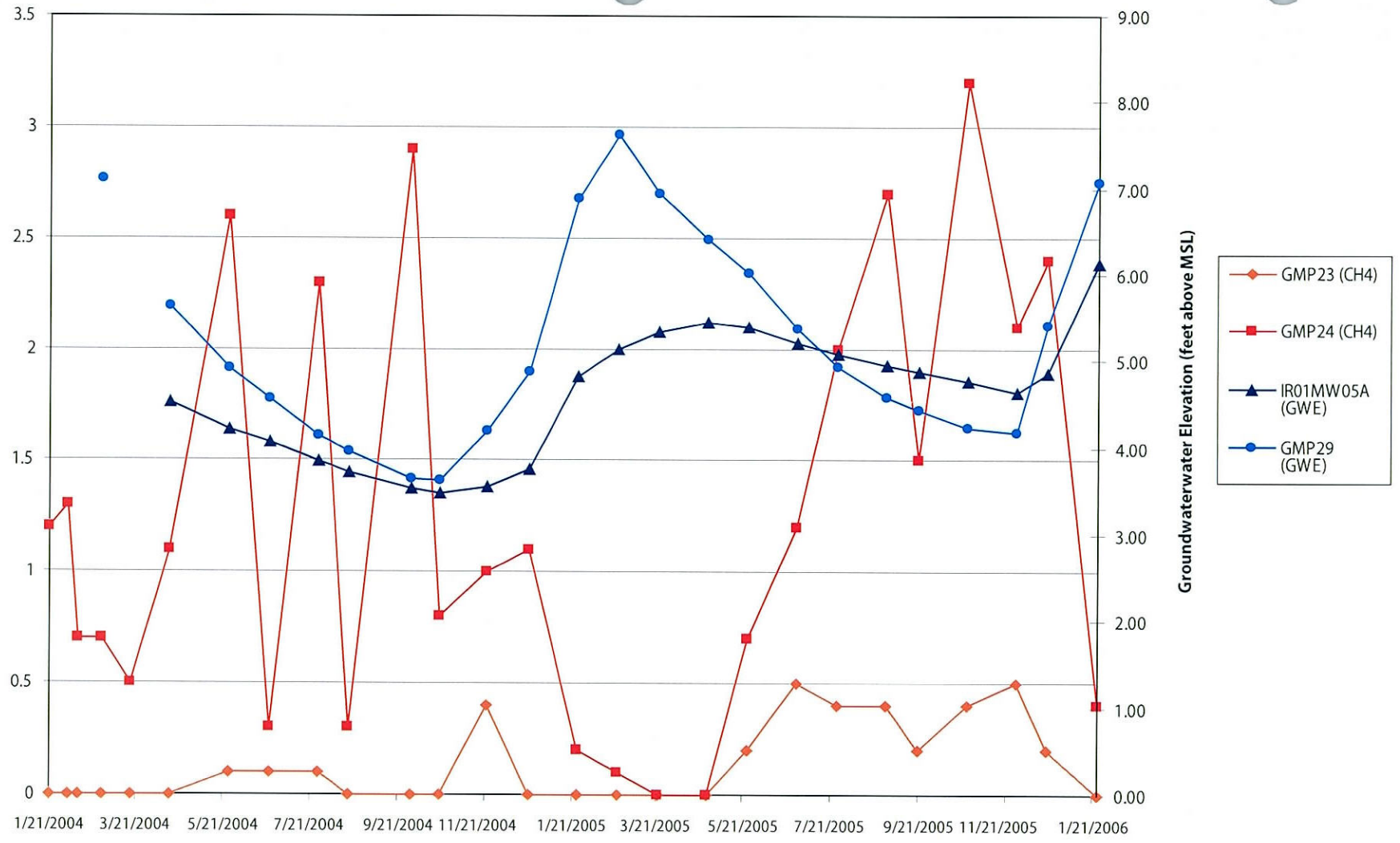
GMP Gas monitoring probe
NMOC Non-Methane Organic Compounds
UCSF University of California, San Francisco

Innovative Technical Solutions, Inc.

Monthly Landfill Gas Monitoring Report
Hunters Point Shipyard
San Francisco, California

FIGURE 11
NMOC Concentrations for GMPs at the UCSF Compound
February 2005-January 2006

2002/02-125 Navy HPS/02-125.15 Parcel E Landfill Gas/Graphics/Monthly Reports/Dec 05/Excel Chart 11 12-05.ai



Notes:
Groundwater elevations shown in blue, for the two groundwater monitoring locations nearest GMP23 and GMP24. Methane concentrations shown in shades of red.

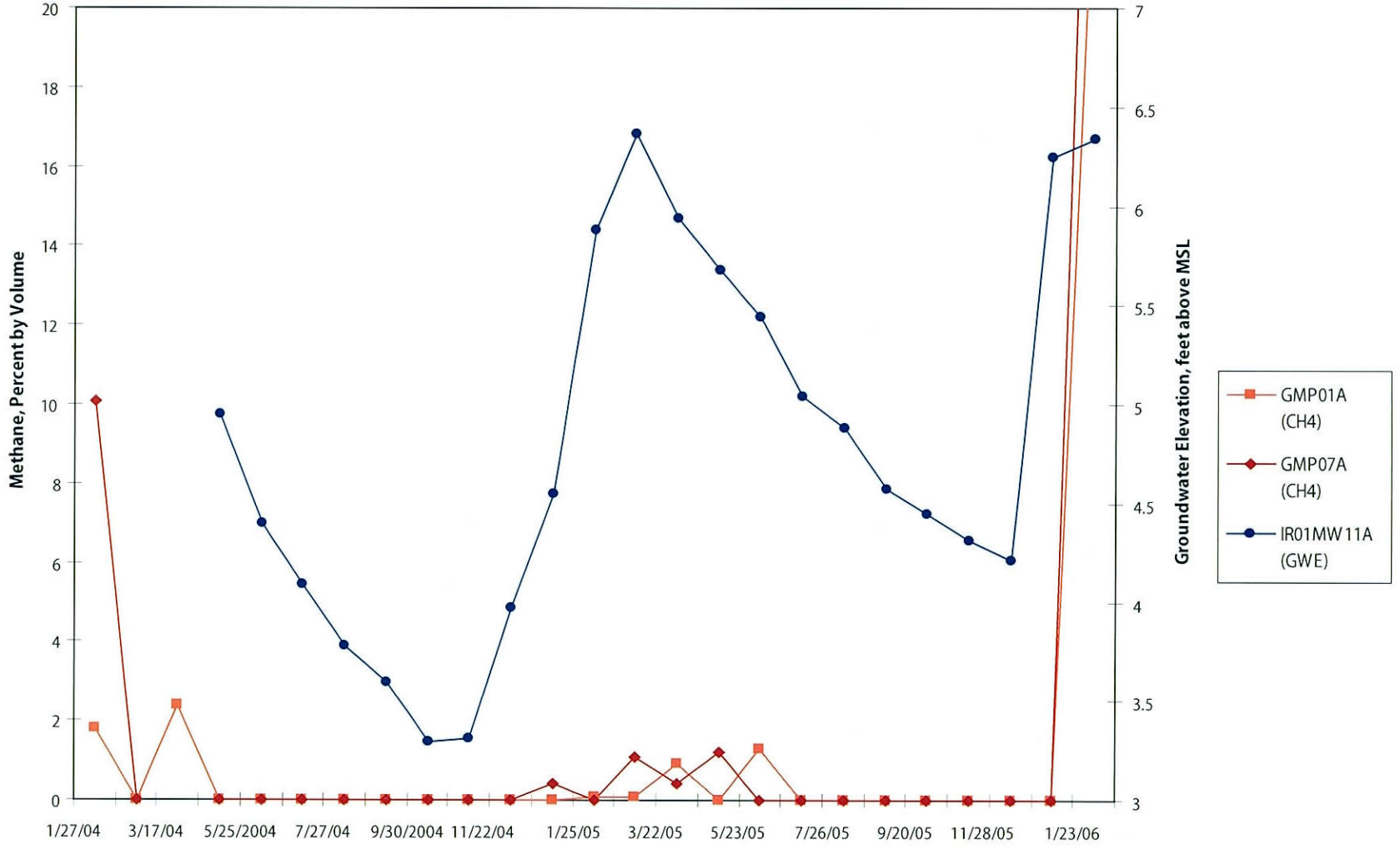
CH4 Methane
GMP Gas monitoring probe
GWE Groundwater elevation, feet above mean sea level
IR Installation Restoration

Innovative Technical Solutions, Inc.

Monthly Landfill Gas Monitoring Report
Hunters Point Shipyard
San Francisco, California

FIGURE 12
Methane Concentrations and Groundwater Elevations near GMP24
January 2004-January 2006

2002/02-125 Navy HPS/02-125.15 Parcel E Landfill Gas/Graphics/Monthly Reports/Dec 05/Excel Chart 11 12-05.ai



Notes: Groundwater elevations shown in blue, for the groundwater monitoring well nearest GMP07A.
Methane concentrations shown in shades of red

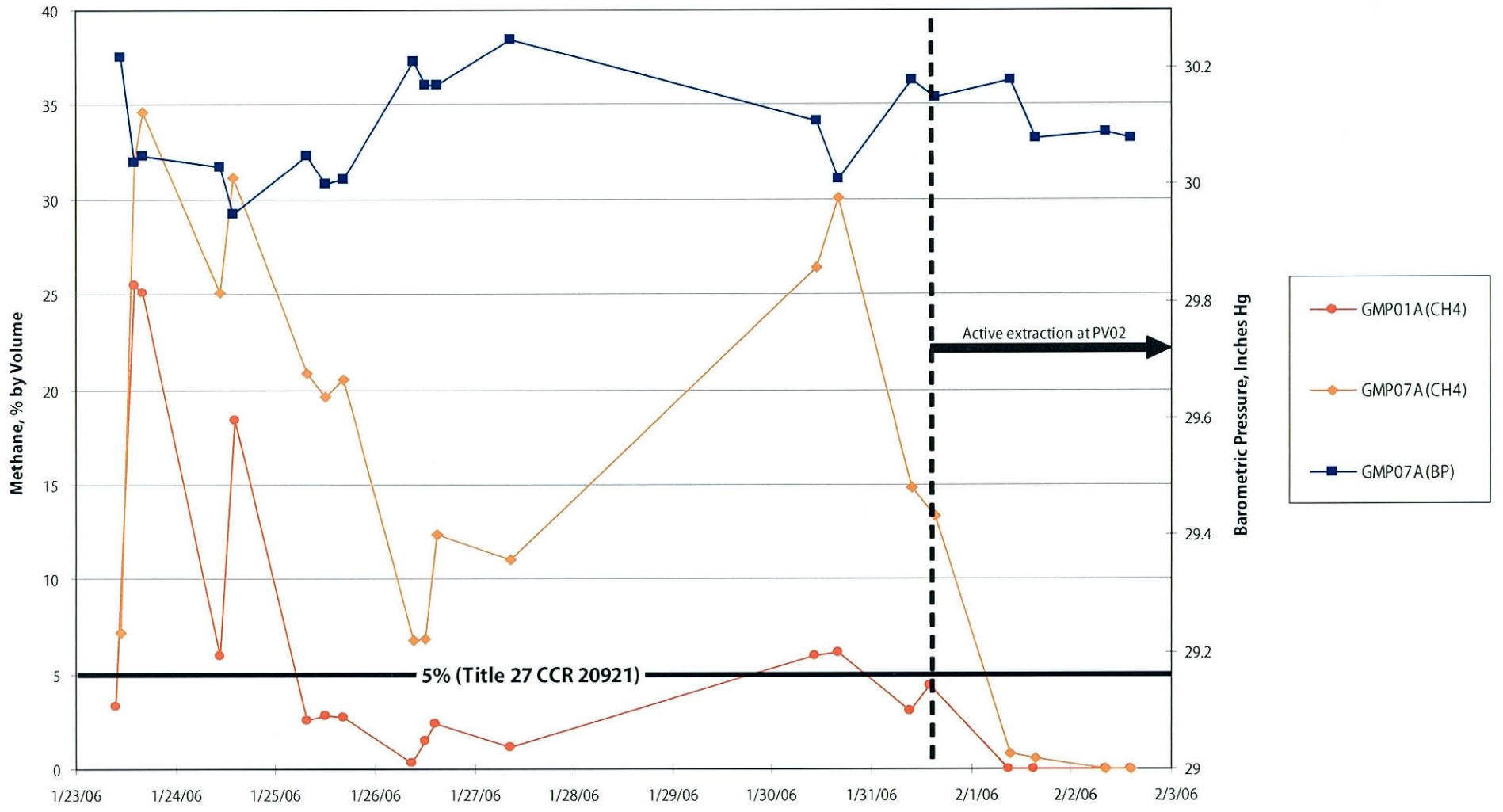
CH4 Methane
GMP Gas monitoring probe
GWE Groundwater elevation, feet above mean sea level
IR Installation restoration
MW Monitoring Well

Innovative Technical Solutions, Inc.

Monthly Landfill Gas Monitoring Report
Hunters Point Shipyard
San Francisco, California

FIGURE 13
Methane Concentrations at
GMP01A and GMP07A
January 23, 2006-February 2, 2006

2002/02-125 Navy HPS/02-125.15 Parcel E Landfill Gas/Graphics/Monthly Reports/Dec 05/Excel Chart 11 12-05.ai



Notes:
27 CCR Title 27 of the California Code of Regulations
GMP Gas monitoring probe
CH4 Methane
BP Barometric Pressure

Innovative Technical Solutions, Inc.

Monthly Landfill Gas Monitoring Report
Hunters Point Shipyard
San Francisco, California

FIGURE 14
Barometric Pressure and Methane Concentrations at GMP01A and GMP07A
January 23, 2006-February 2, 2006

2002/02-125 Navy HPS/02-125.15 Parcel E Landfill Gas/Graphics/Monthly Reports/Dec 05/Excel Chart 11 12-05.ai

APPENDIX A

LANDFILL GAS MONITORING LOGS AND WATER-LEVEL MONITORING LOGS

January 23, 2006 (monthly monitoring)
January 23 – February 2, 2006 (response monitoring)

Landfill Gas Monitoring Log

Weather: Clear, warm

Name: B. Womack, B. Dee

Sampling Location					GEM-2000				PID			
Location ID	Description (for example, GMP, Well, Carbon, Hydrosil)	Date / Time of Measurement	Temp (°F)	Barometric Pressure (in. Hg)	Methane (%)	CO_2 (%)	O_2 (%)	Percent of LEL	Non-Methane VOCs (ppm)	Bckgrd. NMOCs (ppm)	Soil Gas Pressure (in. H_20)	Notes (e.g., active extraction location, flow rate, probe damage, instrument issues, etc.)
IR01MW366A	Landfill Cap Well	1/23/06 8:46	55	30.25	26.1	11.6	3.5	522	0.1	0.1	0	
IR01MWI-5	Landfill Cap Well	1/23/06 8:57	55	30.26	56.6	25.7	2.9	1132	0.1	0.1	0	
IR01MW18A	Landfill Cap Well	1/23/06 9:01	57	30.21	61.9	31.1	0	1238	0.1	0.1	0	
IR01MW16A	Landfill Cap Well	1/23/06 9:11	56	30.26	55.8	29.2	2.1	1116	0.1	0.1	0	
GMP-20	Gas Monitoring Probe	1/23/06 9:17	55	30.22	0	3.1	19.4	0	0.1	0.1	0	
GMP-21	Gas Monitoring Probe	1/23/06 9:26	57	30.22	0	1.2	20.4	0	0.1	0.1	0	
GMP-10	Gas Monitoring Probe	1/23/06 9:29	57	30.22	0	0.7	18.7	0	0.1	0.1	0	
GMP-11A	Gas Monitoring Probe	1/23/06 9:32	56	30.23	0	5.4	6.4	0	0.1	0.1	0	
GMP-12	Gas Monitoring Probe	1/23/06 9:36	56	30.23	0.4	7.5	0	8	0.1	0.1	0	
PV-01influent	Passive Sys. Influent	1/23/06 9:38	56	30.19	49.9	23.7	0.1	998	0.1	0.1	NA	
PV-01carbon1	Passive Sys. 1st Carbon	1/23/06 9:39	57	30.19	50.3	24.3	0.1	1006	0.1	0.1	NA	
PV-01hydrosil	Passive Sys. Hydrosil	1/23/06 9:41	57	30.20	26.9	14.2	6.2	538	0.1	0.1	NA	
GMP-01A	Gas Monitoring Probe	1/23/06 9:45	58	30.20	3.3	10.2	0	66	0.1	0.1	0	
PV-05influent	Passive Sys. Influent	1/23/06 10:03	61	30.18	61.7	28.5	0	1234	0.1	0.1	NA	
PV-05carbon1	Passive Sys. 1st Carbon	1/23/06 10:04	59	30.18	61.9	28.5	0	1238	0.1	0.1	NA	
PV-05hydrosil	Passive Sys. Hydrosil	1/23/06 10:06	59	30.17	58.5	32.1	0	1170	0.1	0.1	NA	
GMP-02A	Gas Monitoring Probe	1/23/06 10:13	61	30.18	0	5.4	6.5	0	0.1	0.1	0	
PV-02influent	Active Sys. Influent	1/23/06 10:16	60	30.18	50.9	25.5	0	1018	0.1	0.1	NA	Active ext. off
PV-02carbon1	Active Sys. 1st Carbon	1/23/06 10:17	61	30.18	49.9	25.6	0.2	998	0.1	0.1	NA	Active ext. off
PV-02hydrosil	Active Sys. Hydrosil	1/23/06 10:19	58	30.17	25.8	20.2	4.5	516	0.1	0.1	NA	Active ext. off
GMP-04A	Gas Monitoring Probe	1/23/06 10:21	58	30.20	0	2.2	17.7	0	0.1	0.1	0	
GMP-05B	Gas Monitoring Probe	1/23/06 10:29	58	30.18	0	1.1	10.3	0	0.1	0.1	0	
DP1	Drainage Catch Basin	1/23/06 10:30	63	30.20	0	0	21.0	0	0.1	0.1	NA	

Landfill Gas Monitoring Log

Weather: Clear, warm

Name: B. Womack, B. Dee

Sampling Location		Date / Time of Measurement	Temp (°F)	Barometric Pressure (in. Hg)	GEM-2000				PID		Soil Gas Pressure (in. H_2O)	Notes (e.g., active extraction location, flow rate, probe damage, instrument issues, etc.)
Location ID	Description (for example, GMP, Well, Carbon, Hydrosil)				Methane (%)	CO_2 (%)	O_2 (%)	Percent of LEL	Non-Methane VOCs (ppm)	Bckgrd. NMOCs (ppm)		
PV-03influent	Passive Sys. Influent	1/23/06 10:34	58	30.20	0	2.0	19.4	0	0.1	0.1	NA	
PV-03carbon1	Passive Sys. 1st Carbon	1/23/06 10:35	58	30.16	0	2.2	19.2	0	0.1	0.1	NA	
PV-03hydrosil	Passive Sys. Hydrosil	1/23/06 10:37	58	30.16	0	0.4	20.9	0	0.1	0.1	NA	
GMP-06B	Gas Monitoring Probe	1/23/06 10:39	59	30.17	0	1.3	18.3	0	0.1	0.1	0	
DP2	Drainage Catch Basin	1/23/06 10:41	60	30.19	0	0	20.8	0	0.1	0.1	NA	
GMP-07A	Gas Monitoring Probe	1/23/06 10:48	61	30.22	7.2	12.2	0	144	0.1	0.1	0	
PV-04influent	Passive Sys. Influent	1/23/06 10:50	59	30.19	0	0.7	19.1	0	0.1	0.1	NA	
PV-04carbon1	Passive Sys. 1st Carbon	1/23/06 10:53	58	30.15	0	0.3	19.3	0	0.1	0.1	NA	
PV-04hydrosil	Passive Sys. Hydrosil	1/23/06 10:54	58	30.15	0	0	20.5	0	0.1	0.1	NA	
GMP-09	Gas Monitoring Probe	1/23/06 10:57	61	30.15	0	1.8	14.7	0	0.1	0.1	0	
GMP-08A	Gas Monitoring Probe	1/23/06 11:02	61	30.18	0	2.5	0.2	0	0.1	0.1	0	
Light pole	UCSF Light Pole Ambient	1/23/06 11:13	62	30.17	0	0	20.8	0	0.1	0.1	NA	
GMP-22	Gas Monitoring Probe	1/23/06 11:14	60	30.13	0	9.7	0.2	0	0.1	0.1	0	
AmbientA	UCSF Fenceline Ambient	1/23/06 11:17	64	30.14	0	0	20.7	0	0.1	0.1	NA	
AmbientB	UCSF Ball Court Ambient	1/23/06 11:19	63	30.14	0	0	20.8	0	0.1	0.1	NA	
GMP-23	Gas Monitoring Probe	1/23/06 11:21	58	30.13	0	14.4	0.5	0	0.1	0.1	0	
GMP-03	Gas Monitoring Probe	1/23/06 11:24	60	30.13	0	2.4	15.9	0	0.1	0.1	0	
830crawlspace	Bldg. 830 Ambient	1/23/06 11:28	57	30.12	0	0	20.8	0	0.1	0.1	NA	
GMP-24	Gas Monitoring Probe	1/23/06 11:31	59	30.12	0.4	11.3	0	8	0.1	0.1	0	
GMP-25	Gas Monitoring Probe	1/23/06 11:34	64	30.12	0	8.7	0	0	0.1	0.1	0	
GMP-26	Gas Monitoring Probe	1/23/06 11:37	63	30.12	0	2.3	15.2	0	0.1	0.1	0	
GMP-19	Gas Monitoring Probe	1/23/06 12:36	59	30.11	0	0	19.9	0	0.1	0.1	0	
GMP-32	Gas Monitoring Probe	1/23/06 12:40	63	30.10	0	0.1	20.1	0	0.1	0.1	0	
GMP-18	Gas Monitoring Probe	1/23/06 12:50	68	30.10	0	0.4	17.8	0	0.1	0.1	0	
GMP-31	Gas Monitoring Probe	1/23/06 12:55	69	30.08	0	0.1	19.5	0	0.1	0.1	0	
GMP-17	Gas Monitoring Probe	1/23/06 13:00	67	30.08	0	0.2	18.4	0	0.1	0.1	0	
GMP-30	Gas Monitoring Probe	1/23/06 13:04	67	30.08	0	0.6	18.1	0	0.1	0.1	0	

Landfill Gas Monitoring Log

Weather: Clear, warm

Name: B. Womack, B. Dee

Sampling Location					GEM-2000				PID			
Location ID	Description (for example, GMP, Well, Carbon, Hydrosil)	Date / Time of Measurement	Temp (°F)	Barometric Pressure (in. Hg)	Methane (%)	CO_2 (%)	O_2 (%)	Percent of LEL	Non-Methane VOCs (ppm)	Bckgrd. NMOCs (ppm)	Soil Gas Pressure (in. H_2O)	Notes (e.g., active extraction location, flow rate, probe damage, instrument issues, etc.)
GMP-16	Gas Monitoring Probe	1/23/06 13:08	66	30.07	0	0.1	19.4	0	0.1	0.1	0	
GMP-29	Gas Monitoring Probe	1/23/06 13:11	66	30.07	0	1.6	16.9	0	0.1	0.1	0	
GMP-15	Gas Monitoring Probe	1/23/06 13:15	67	30.07	0	1.3	17.5	0	0.1	0.1	0	
GMP-28	Gas Monitoring Probe	1/23/06 13:17	67	30.06	0	1.0	16.8	0	0.1	0.1	0	
GMP-14	Gas Monitoring Probe	1/23/06 13:20	64	30.06	0	0.3	20.0	0	0.1	0.1	0	
GMP-27	Gas Monitoring Probe	1/23/06 13:23	65	30.06	0	0.6	18.2	0	0.1	0.1	0	
GMP-13	Gas Monitoring Probe	1/23/06 13:27	68	30.06	0	0.9	16.0	0	0.1	0.1	0	

Legend:

%	percent by volume
°F	degrees Fahrenheit
CO_2	carbon dioxide
GEM-2000	CES-LANDTEC landfill gas meter
in. Hg	inches of mercury
in. H_20	inches of water
LEL	lower explosive limit
NA	not applicable
NMOC	non-methane organic compound
O_2	oxygen
PID	photoionization detector
ppm	parts per million
VOC	volatile organic compound

Water Level Monitoring Log

Name: B. Dee, B. Womack

Weather: Clear, warm

Date: 1/23/06

Location ID	Description (for example, GMP / Well / Carbon / Hydrosil)	Time	Water Level (feet below top of casing)	Notes (e.g, active extraction location, flow rate, probe damage, instrument issues, etc.):
IR01MW02B	Well	1150	13.51	
IR01MW03A	Well	1151	13.23	
IR01P03AA	Well	1152	15.67	
IR01P04A	Well	1153	15.47	
IR01P03AB	Well	1154	12.72	
IR01MW05A	Well	1200	16.43	
IR01MW12A	Well	1210	12.25	
IR01MW11A	Well	1211	11.62	
IR01MW10A	Well	1215	7.45	
IR74MW01A	Well	12.32	10.57	
GMP-32	Gas Monitoring Probe	1241	9.75	
GMP-31	Gas Monitoring Probe	1255	10.23	
GMP-30	Gas Monitoring Probe	1305	10.35	
GMP-29	Gas Monitoring Probe	1312	11.42	
GMP-28	Gas Monitoring Probe	1318	13.11	
GMP-27	Gas Monitoring Probe	1324	8.92	
IR76MW13A	Well	1331	11.71	

Landfill Gas Monitoring Log

Weather: Clear, warm

Name: B. Womack, B. Dee

Sampling Location		Date / Time of Measurement	Temp (°F)	Barometric Pressure (in. Hg)	GEM-2000				PID		Soil Gas Pressure (in. H_2O)	Notes (e.g., active extraction location, flow rate, probe damage, instrument issues, etc.)
Location ID	Description (for example, GMP, Well, Carbon, Hydrosil)				Methane (%)	CO_2 (%)	O_2 (%)	Percent of LEL	Non-Methane VOCs (ppm)	Bckgrd. NMOCs (ppm)		
GMP-01A	Gas Monitoring Probe	1/23/06 14:04	63	30.05	25.5	15.8	0.9	510	0.1	0.1	0	
GMP-07A	Gas Monitoring Probe	1/23/06 14:12	69	30.04	32.0	17.1	0	640	0.1	0.1	0	Active extraction on
GMP-01A	Gas Monitoring Probe	1/23/06 15:57	68	30.04	25.1	15.1	0	482	0.1	0.1	0	Rental GEM-2000
GMP-07A	Gas Monitoring Probe	1/23/06 15:59	69	30.05	34.6	17.3	0	692	0.1	0.1	0	Active extraction on

Legend:

%	percent by volume
°F	degrees Fahrenheit
CO_2	carbon dioxide
GEM-2000	CES-LANDTEC landfill gas meter
in. Hg	inches of mercury
in. H_20	inches of water
LEL	lower explosive limit
NA	not applicable
NMOC	non-methane organic compound
O_2	oxygen
PID	photoionization detector
ppm	parts per million
VOC	volatile organic compound

Landfill Gas Monitoring Log

Weather: Clear, warm

Name: B. Womack, B. Dee

Sampling Location					GEM-2000				PID			
Location ID	Description (for example, GMP, Well, Carbon, Hydrosil)	Date / Time of Measurement	Temp (°F)	Barometric Pressure (in. Hg)	Methane (%)	CO_2 (%)	O_2 (%)	Percent of LEL	Non-Methane VOCs (ppm)	Bckgrd. NMOCs (ppm)	Soil Gas Pressure (in. H_20)	Notes (e.g., active extraction location, flow rate, probe damage, instrument issues, etc.)
GMP-07A	Gas Monitoring Probe	1/24/06 10:35	57	30.03	25.1	15.7	4.3	502	0.1	0.1	0	Actively extracting
GMP-01A	Gas Monitoring Probe	1/24/06 10:45	56	30.03	6.0	11.0	0	120	0.1	0.1	0	
GMP-07A	Gas Monitoring Probe	1/24/06 13:54	66	29.95	31.1	17.4	4.9	622	0.1	0.1	0	Actively extracting
GMP-01A	Gas Monitoring Probe	1/24/06 14:01	62	29.95	18.4	14.1	0	368	0.1	0.1	0	

Legend:

%	percent by volume
°F	degrees Fahrenheit
CO_2	carbon dioxide
GEM-2000	CES-LANDTEC landfill gas meter
in. Hg	inches of mercury
in. H_20	inches of water
LEL	lower explosive limit
NA	not applicable
NMOC	non-methane organic compound
O_2	oxygen
PID	photoionization detector
ppm	parts per million
VOC	volatile organic compound

Landfill Gas Monitoring Log

Weather: Cloudy, cool

Name: B. Womack, B. Dee

Sampling Location		Date / Time of Measurement	Temp (°F)	Barometric Pressure (in. Hg)	GEM-2000				PID		Soil Gas Pressure (in. H_2O)	Notes (e.g., active extraction location, flow rate, probe damage, instrument issues, etc.)
Location ID	Description (for example, GMP, Well, Carbon, Hydrosil)				Methane (%)	CO_2 (%)	O_2 (%)	Percent of LEL	Non-Methane VOCs (ppm)	Bckgrd. NMOCs (ppm)		
GMP-01A	Gas Monitoring Probe	1/25/06 7:28	49	30.03	2.6	9.5	0	52	0.1	0.1	0	
GMP-07A	Gas Monitoring Probe	1/25/06 7:22	48	30.05	20.9	14.8	6.4	418	0.1	0.1	0	Actively extracting
GMP-01A	Gas Monitoring Probe	1/25/06 11:56	56	30.02	2.8	10.0	0	56	0.1	0.1	0	Active extraction on
GMP-07A	Gas Monitoring Probe	1/25/06 12:09	54	30.00	19.6	15.5	5.7	392	0.1	0.1	0	Actively extracting
GMP-01A	Gas Monitoring Probe	1/25/06 16:15	59	30.01	2.7	7.5	7.6	54	0.1	0.1	0	Actively extracting
GMP-07A	Gas Monitoring Probe	1/25/06 16:25	59	30.01	20.5	15.5	5.6	410	0.1	0.1	0	Actively extracting

Legend:

%	percent by volume
°F	degrees Fahrenheit
CO_2	carbon dioxide
GEM-2000	CES-LANDTEC landfill gas meter
in. Hg	inches of mercury
in. H_20	inches of water
LEL	lower explosive limit
NA	not applicable
NMOC	non-methane organic compound
O_2	oxygen
PID	photoionization detector
ppm	parts per million
VOC	volatile organic compound

Landfill Gas Monitoring Log

Weather: Partly cloudy, cool

Name: B. Womack

Sampling Location		Date / Time of Measurement	Temp (°F)	Barometric Pressure (in. Hg)	GEM-2000				PID		Soil Gas Pressure (in. H_2O)	Notes (e.g., active extraction location, flow rate, probe damage, instrument issues, etc.)
Location ID	Description (for example, GMP, Well, Carbon, Hydrosil)				Methane (%)	CO_2 (%)	O_2 (%)	Percent of LEL	Non-Methane VOCs (ppm)	Bckgrd. NMOCs (ppm)		
GMP-01A	Gas Monitoring Probe	1/26/06 8:52	57	30.23	0.3	4.8	12.0	6	0.1	0.1	0	Actively extracting
GMP-01A	Gas Monitoring Probe	1/26/06 12:00	61	30.19	1.5	5.0	12.8	30	0.1	0.1	0	Actively extracting
GMP-01A	Gas Monitoring Probe	1/26/06 14:37	57	30.15	2.4	5.3	12.0	48	0.1	0.1	0	Actively extracting
GMP-07A	Gas Monitoring Probe	1/26/06 9:07	56	30.21	6.8	10.8	8.9	136	0.1	0.1	0	Actively extracting
GMP-07A	Gas Monitoring Probe	1/26/06 12:13	63	30.17	6.9	11.8	8.6	138	0.1	0.1	0	Actively extracting
GMP-07A	Gas Monitoring Probe	1/26/06 14:48	55	30.17	12.3	13.5	6.9	246	0.1	0.1	0	Actively extracting
GMP-23	Gas Monitoring Probe	1/26/06 14:09	57	30.17	0	14.8	0	0	0.1	0.1	0	Actively extracting
GMP-24	Gas Monitoring Probe	1/26/06 14:14	60	30.16	0.5	11.7	0	10	0.1	0.1	0	Actively extracting

Legend:

%	percent by volume
°F	degrees Fahrenheit
CO_2	carbon dioxide
GEM-2000	CES-LANDTEC landfill gas meter
in. Hg	inches of mercury
in. H_20	inches of water
LEL	lower explosive limit
NA	not applicable
NMOC	non-methane organic compound
O_2	oxygen
PID	photoionization detector
ppm	parts per million
VOC	volatile organic compound

Landfill Gas Monitoring Log

Weather: Scattered showers, cool

Name: B. Womack

Sampling Location		Date / Time of Measurement	Temp (°F)	Barometric Pressure (in. Hg)	GEM-2000				PID		Soil Gas Pressure (in. H_2O)	Notes (e.g., active extraction location, flow rate, probe damage, instrument issues, etc.)
Location ID	Description (for example, GMP, Well, Carbon, Hydrosil)				Methane (%)	CO_2 (%)	O_2 (%)	Percent of LEL	Non-Methane VOCs (ppm)	Bckgrd. NMOCs (ppm)		
GMP-01A	Gas Monitoring Probe	1/27/06 8:27	51	30.24	1.2	4.7	12.6	24	0.1	0.1	0	Actively extracting
GMP-07A	Gas Monitoring Probe	1/27/06 8:42	51	30.25	11.0	12.2	7.9	220	0.1	0.1	0	Actively extracting

Legend:

%	percent by volume
°F	degrees Fahrenheit
CO_2	carbon dioxide
GEM-2000	CES-LANDTEC landfill gas meter
in. Hg	inches of mercury
in. H_20	inches of water
LEL	lower explosive limit
NA	not applicable
NMOC	non-methane organic compound
O_2	oxygen
PID	photoionization detector
ppm	parts per million
VOC	volatile organic compound

Landfill Gas Monitoring Log

Weather: Intermittent rain, cool

Name: B. Womack

Sampling Location		Date / Time of Measurement	Temp (°F)	Barometric Pressure (in. Hg)	GEM-2000				PID		Soil Gas Pressure (in. H_2O)	Notes (e.g., active extraction location, flow rate, probe damage, instrument issues, etc.)
Location ID	Description (for example, GMP, Well, Carbon, Hydrosil)				Methane (%)	CO_2 (%)	O_2 (%)	Percent of LEL	Non-Methane VOCs (ppm)	Bckgrd. NMOCs (ppm)		
GMP-01A	Gas Monitoring Probe	1/30/06 10:20	53	30.09	6.0	5.9	11.5	120	0.1	0.1	0	Actively extracting
GMP-01A	Gas Monitoring Probe	1/30/06 15:46	57	30.03	6.1	6.5	10.3	122	0.1	0.1	0	Actively extracting
GMP-07A	Gas Monitoring Probe	1/30/06 10:33	52	30.11	26.4	16.2	4.7	528	0.1	0.1	0	Actively extracting
GMP-07A	Gas Monitoring Probe	1/30/06 15:56	56	30.01	30.1	17.4	2.9	602	0.1	0.1	0	Actively extracting

Legend:

%	percent by volume
°F	degrees Fahrenheit
CO_2	carbon dioxide
GEM-2000	CES-LANDTEC landfill gas meter
in. Hg	inches of mercury
in. H_20	inches of water
LEL	lower explosive limit
NA	not applicable
NMOC	non-methane organic compound
O_2	oxygen
PID	photoionization detector
ppm	parts per million
VOC	volatile organic compound

Landfill Gas Monitoring Log

Weather: Cloudy, cool

Name: B. Womack

Sampling Location					GEM-2000				PID			
Location ID	Description (for example, GMP, Well, Carbon, Hydrosil)	Date / Time of Measurement	Temp (°F)	Barometric Pressure (in. Hg)	Methane (%)	CO_2 (%)	O_2 (%)	Percent of LEL	Non-Methane VOCs (ppm)	Bckgrd. NMOCs (ppm)	Soil Gas Pressure (in. H_20)	Notes (e.g., active extraction location, flow rate, probe damage, instrument issues, etc.)
GMP-01A	Gas Monitoring Probe	1/31/06 9:19	53	30.16	3.1	5.3	11.8	62	0.1	0.1	0	Actively extracting
GMP-01A	Gas Monitoring Probe	1/31/06 14:14	54	30.14	4.4	5.7	12.1	88	0.1	0.1	0	Actively extracting
GMP-07A	Gas Monitoring Probe	1/31/06 9:45	51	30.18	14.8	14.5	4.7	296	0.1	0.1	0	Actively extracting
GMP-07A	Gas Monitoring Probe	1/31/06 15:05	60	30.15	13.3	13.8	6.9	266	0.1	0.1	0	Actively extracting

Legend:

%	percent by volume
°F	degrees Fahrenheit
CO_2	carbon dioxide
GEM-2000	CES-LANDTEC landfill gas meter
in. Hg	inches of mercury
in. H_20	inches of water
LEL	lower explosive limit
NA	not applicable
NMOC	non-methane organic compound
O_2	oxygen
PID	photoionization detector
ppm	parts per million
VOC	volatile organic compound

Landfill Gas Monitoring Log

Weather: Misting, cool

Name: B. Womack

Sampling Location		Date / Time of Measurement	Temp (°F)	Barometric Pressure (in. Hg)	GEM-2000				PID		Soil Gas Pressure (in. H_2O)	Notes (e.g., active extraction location, flow rate, probe damage, instrument issues, etc.)
Location ID	Description (for example, GMP, Well, Carbon, Hydrosil)				Methane (%)	CO_2 (%)	O_2 (%)	Percent of LEL	Non-Methane VOCs (ppm)	Bckgrd. NMOCs (ppm)		
GMP-01A	Gas Monitoring Probe	2/1/06 9:01	49	30.14	0	6.4	5.3	0	0.1	0.1	0	
GMP-01A	Gas Monitoring Probe	2/1/06 15:03	56	30.07	0	6.4	5.5	0	0.1	0.1	0	
GMP-07A	Gas Monitoring Probe	2/1/06 9:24	51	30.18	0.8	6.4	14.6	16	0.1	0.1	0	Actively extracting
GMP-07A	Gas Monitoring Probe	2/1/06 15:13	54	30.08	0.6	5.5	15.9	12	0.1	0.1	0	Actively extracting
PV-02influent	Passive Sys. Influent	2/1/06 9:05	50	30.18	5.6	10.1	12.4	112	0.1	0.1	NA	Actively extracting
PV-02influent	Passive Sys. Influent	2/1/06 15:06	54	30.07	15.7	13.7	9.9	314	0.1	0.1	NA	Actively extracting

Legend:

%	percent by volume
°F	degrees Fahrenheit
CO_2	carbon dioxide
GEM-2000	CES-LANDTEC landfill gas meter
in. Hg	inches of mercury
in. H_20	inches of water
LEL	lower explosive limit
NA	not applicable
NMOC	non-methane organic compound
O_2	oxygen
PID	photoionization detector
ppm	parts per million
VOC	volatile organic compound

Landfill Gas Monitoring Log

Weather: Misting, cool; clearing and warmer by afternoon Name: B. Womack

Sampling Location		Date / Time of Measurement	Temp (°F)	Barometric Pressure (in. Hg)	GEM-2000				PID		Soil Gas Pressure (in. H_20)	Notes (e.g., active extraction location, flow rate, probe damage, instrument issues, etc.)
Location ID	Description (for example, GMP, Well, Carbon, Hydrosil)				Methane (%)	CO_2 (%)	O_2 (%)	Percent of LEL	Non-Methane VOCs (ppm)	Bckgrd. NMOCs (ppm)		
GMP-01A	Gas Monitoring Probe	2/2/06 8:07	56	30.13	0	2.7	14.1	0	0.1	0.1	0	*
GMP-07A	Gas Monitoring Probe	2/2/06 8:24	57	30.09	0	2.6	18.1	0	0.1	0.1	0	Actively extracting *
GMP-01A	Gas Monitoring Probe	2/2/06 14:18	60	30.07	0	4.3	5.6	0	0.1	0.1	0	*
GMP-07A	Gas Monitoring Probe	2/2/06 14:23	61	30.08	0	2.8	17.6	0	0.1	0.1	0	Actively extracting *

Legend:

*	Also actively extracting gas from PV-02 (as well as from GMP07A)
%	percent by volume
°F	degrees Fahrenheit
CO_2	carbon dioxide
GEM-2000	CES-LANDTEC landfill gas meter
in. Hg	inches of mercury
in. H_20	inches of water
LEL	lower explosive limit
NA	not applicable
NMOC	non-methane organic compound
O_2	oxygen
PID	photoionization detector
ppm	parts per million
VOC	volatile organic compound

APPENDIX B

OTHER MONITORING RESULTS

TABLE B-1: METHANE, NMOC, OXYGEN, AND CARBON DIOXIDE CONCENTRATIONS AT OTHER LOCATIONS, JANUARY 23, 2006

Monthly Landfill Gas Monitoring Report for January 2006, Post-Removal Action,
Parcel E-2 Industrial Landfill, Hunters Point Shipyard, San Francisco, California

Location	Methane (% by volume)	NMOC (ppm by volume)	Oxygen (% by volume)	Carbon Dioxide (% by volume)
IR01MW16A *	55.8	0.1	2.1	29.2
IR01MW18A *	61.9	0.1	0.0	31.1
IR01MW366A *	26.1	0.1	3.5	11.6
IR01MWI-5 *	56.6	0.1	2.9	25.7

Notes:

* The regulatory limit of 5% methane does not apply to these monitoring wells, which are located on the landfill.
IR Installation Restoration
MW Monitoring well
NMOC Non-methane organic compounds
ppm parts per million
% percent

APPENDIX C

NOTIFICATION LETTERS OF METHANE EXCEEDANCES

Letter submitted January 27, 2006
Letter submitted February 3, 2006

DEPARTMENT OF THE NAVY
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE WEST
1455 FRAZEE RD, SUITE 900
SAN DIEGO, CA 92108-4310

5090
Ser BPMOW.mrk/0070
27 Jan 2006

Mr. Gino Yekta
California Integrated Waste Management Board
1001 I Street
Sacramento, CA 95812-4025

Mr. Michael Wochnick
California Integrated Waste Management Board
1001 I Street
Sacramento, CA 95812-4025

Dear Mr. Wochnick and Mr Yekta:

Following the procedures in the Final Interim Landfill Gas Monitoring and Control Plan, this is to inform the California Integrated Waste Management Board that during the January 23, 2006 landfill gas monitoring event, two methane exceedances were reported. Between January 23 and January 26, Gas Monitoring Probes (GMP) 01A and 07A ranged from 0.3 – 25.5% and 6.8 – 34.6% methane by volume, respectively, which exceeds the 5% methane by volume regulatory compliance limit.

GMP01A and GMP07A are currently being properly vented using the portable extraction units per the control plan. The most recent follow-up monitoring (January 26, 2006) indicates that methane levels have dropped for GMP01A to 0.3% and for GMP07A to 6.8%. These GMPs will continue to be properly extracted until follow-up monitoring indicates that the methane levels are below 1% by volume for two consecutive days.

Enclosure (1) shows the location of the two GMPs with elevated methane detections and enclosure (2) consists of the detailed monitoring logs for January 23-26, 2006.

Should you have any concerns with this matter, please contact Ms. Melanie Kito at (619) 532-0787.

Sincerely,

KEITH FORMAN
BRAC Environmental Coordinator
By direction of the Director

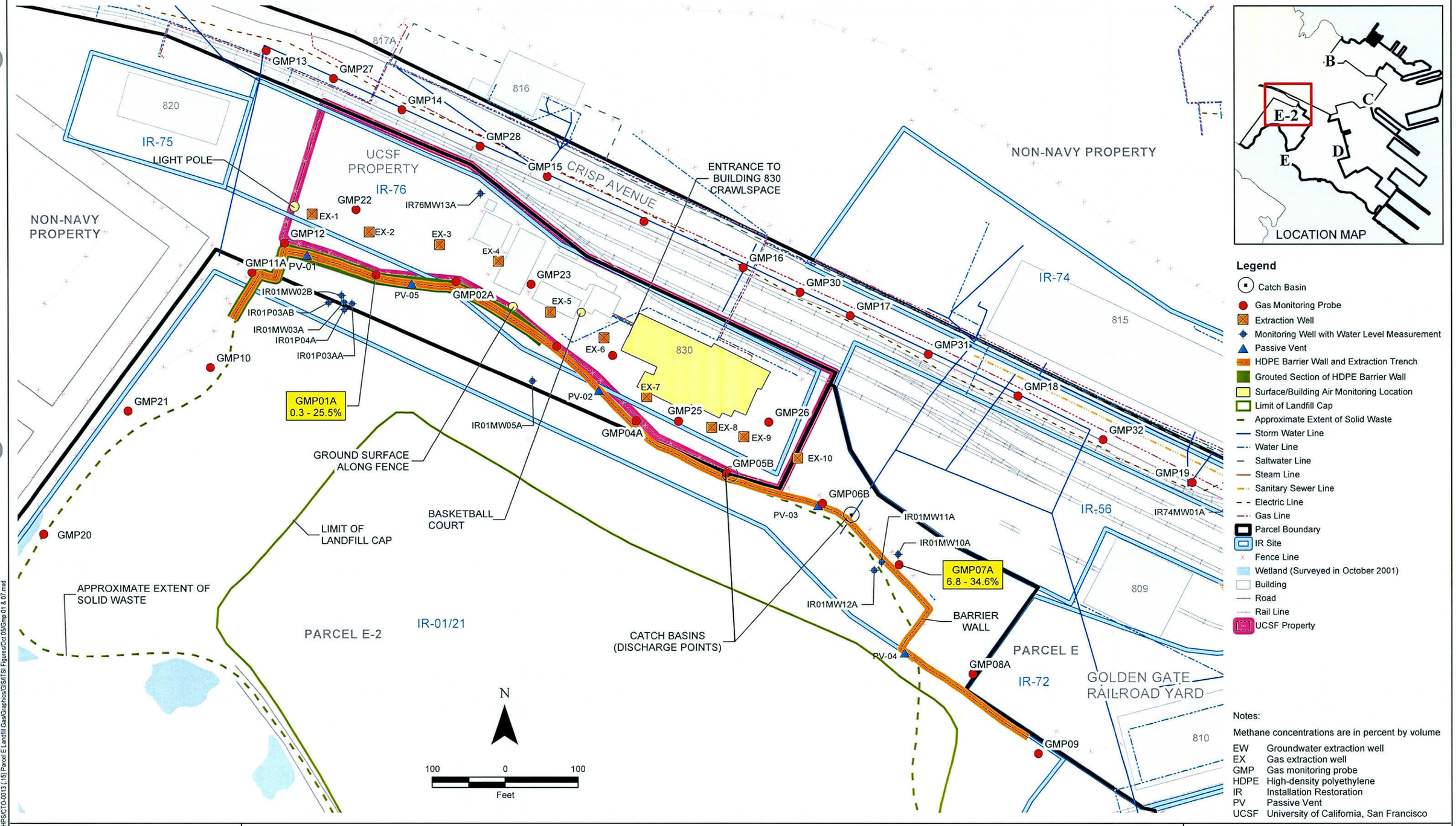
Enclosures: 1. Methane Concentrations at GMPs 01A and 07A; January 23-36, 2006.
2. Landfill Gas Monitoring Logs for January 23-26, 2006.

5090
Ser BPMOW.mrk/0070
27 Jan 2006

Copy to:
Mr. Michael Work (SFD 8-3)
U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Mr. Tom Lanphar
Department of Toxic Substances Control
700 Heinz Avenue, Bldg. F, Suite 200
Berkeley, CA 94710

Mr. Jim Ponton
California Regional Water Quality Control Board, San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612



Notes:

Methane concentrations are in percent by volume

EW	Groundwater extraction well
EX	Gas extraction well
GMP	Gas monitoring probe
HDPE	High-density polyethylene
IR	Installation Restoration
PV	Passive Vent
UCSF	University of California, San Francisco

2002/02-12\\Kary HPS\CTO-0013 (-15) Parcel E Landfill Gas\Graphics\GIS\ITSI Figures\Oct 05\Gmp 01 & 07.mxd

Innovative Technical Solutions, Inc.

Monthly Landfill Gas Monitoring Report
Hunters Point Shipyard
San Francisco, California

FIGURE 3
Methane Concentrations at GMPs 01A and 07A
January 23-26, 2006

Landfill Gas Monitoring Log

Weather: Clear, warm

Name: B. Womack, B. Dee

Sampling Location					GEM-2000				PID			
Location ID	Description (for example, GMP, Well, Carbon, Hydrosil)	Date / Time of Measurement	Temp (°F)	Barometric Pressure (in. Hg)	Methane (%)	CO_2 (%)	O_2 (%)	Percent of LEL	Non-Methane VOCs (ppm)	Bckgrd. NMOCs (ppm)	Soil Gas Pressure (in. H_20)	Notes (e.g., active extraction location, flow rate, probe damage, instrument issues, etc.)
GMP-01A	Gas Monitoring Probe	1/23/2006 14:04	63	30.05	25.5	15.8	0.9	510	0.1	0.1	0	
GMP-07A	Gas Monitoring Probe	1/23/2006 14:12	69	30.04	32.0	17.1	0	640	0.1	0.1	0	
GMP-01A	Gas Monitoring Probe	1/23/2006 15:57	68	30.04	25.1	15.1	0	482	0.1	0.1	0	Rental GEM-2000
GMP-07A	Gas Monitoring Probe	1/23/2006 15:59	69	30.05	34.6	17.3	0	692	0.1	0.1	0	Rental GEM-2000

Legend:

%	percent by volume
°F	degrees Fahrenheit
CO_2	carbon dioxide
GEM-2000	CES-LANDTEC landfill gas meter
in. Hg	inches of mercury
in. H_20	inches of water
LEL	lower explosive limit
NA	not applicable
NMOC	non-methane organic compound
O_2	oxygen
PID	photoionization detector
ppm	parts per million
VOC	volatile organic compound

Landfill Gas Monitoring Log

Weather: Clear, warm

Name: B. Womack, B. Dee

Sampling Location					GEM-2000				PID			
Location ID	Description (for example, GMP, Well, Carbon, Hydrosil)	Date / Time of Measurement	Temp (°F)	Barometric Pressure (in. Hg)	Methane (%)	CO_2 (%)	O_2 (%)	Percent of LEL	Non-Methane VOCs (ppm)	Bckgrd. NMOCs (ppm)	Soil Gas Pressure (in. H_20)	Notes (e.g., active extraction location, flow rate, probe damage, instrument issues, etc.)
GMP-07A	Gas Monitoring Probe	1/24/2006 10:35	57	30.03	25.1	15.7	4.3	502	0.1	0.1	0	
GMP-01A	Gas Monitoring Probe	1/24/2006 10:45	56	30.03	6.0	11.0	0	120	0.1	0.1	0	
GMP-07A	Gas Monitoring Probe	1/24/2006 13:54	66	29.95	31.1	17.4	4.9	622	0.1	0.1	0	
GMP-01A	Gas Monitoring Probe	1/24/2006 14:01	62	29.95	18.4	14.1	0	368	0.1	0.1	0	

Legend:

%	percent by volume
°F	degrees Fahrenheit
CO_2	carbon dioxide
GEM-2000	CES-LANDTEC landfill gas meter
in. Hg	inches of mercury
in. H_20	inches of water
LEL	lower explosive limit
NA	not applicable
NMOC	non-methane organic compound
O_2	oxygen
PID	photoionization detector
ppm	parts per million
VOC	volatile organic compound

Landfill Gas Monitoring Log

Weather: Cloudy, cool

Name: B. Womack, B. Dee

Sampling Location					GEM-2000				PID			
Location ID	Description (for example, GMP, Well, Carbon, Hydrosil)	Date / Time of Measurement	Temp (°F)	Barometric Pressure (in. Hg)	Methane (%)	CO_2 (%)	O_2 (%)	Percent of LEL	Non-Methane VOCs (ppm)	Bckgrd. NMOCs (ppm)	Soil Gas Pressure (in. H_2O)	Notes (e.g., active extraction location, flow rate, probe damage, instrument issues, etc.)
GMP-01A	Gas Monitoring Probe	1/25/2006 7:28	49	30.03	2.6	9.5	0	52	0.1	0.1	0	
GMP-07A	Gas Monitoring Probe	1/25/2006 7:22	48	30.05	20.9	14.8	6.4	418	0.1	0.1	0	
GMP-01A	Gas Monitoring Probe	1/25/2006 11:56	56	30.02	2.8	10.0	0	56	0.1	0.1	0	
GMP-07A	Gas Monitoring Probe	1/25/2006 12:09	54	30.00	19.6	15.5	5.7	392	0.1	0.1	0	
GMP-01A	Gas Monitoring Probe	1/25/2006 16:15	59	30.01	2.7	7.5	7.6	54	0.1	0.1	0	
GMP-07A	Gas Monitoring Probe	1/25/2006 16:25	59	30.01	20.5	15.5	5.6	410	0.1	0.1	0	

Legend:

%	percent by volume
°F	degrees Fahrenheit
CO_2	carbon dioxide
GEM-2000	CES-LANDTEC landfill gas meter
in. Hg	inches of mercury
in. H_20	inches of water
LEL	lower explosive limit
NA	not applicable
NMOC	non-methane organic compound
O_2	oxygen
PID	photoionization detector
ppm	parts per million
VOC	volatile organic compound

Landfill Gas Monitoring Log

Weather: Partly cloudy, cool

Name: B. Womack

Sampling Location		Date / Time of Measurement	Temp (°F)	Barometric Pressure (in. Hg)	GEM-2000				PID		Soil Gas Pressure (in. H_20)	Notes (e.g., active extraction location, flow rate, probe damage, instrument issues, etc.)
Location ID	Description (for example, GMP, Well, Carbon, Hydrosil)				Methane (%)	CO_2 (%)	O_2 (%)	Percent of LEL	Non-Methane VOCs (ppm)	Bckgrd. NMOCs (ppm)		
GMP-01A	Gas Monitoring Probe	1/26/2006 8:52	57	30.23	0.3	4.8	12.0	6	0.1	0.1	0	
GMP-01A	Gas Monitoring Probe	1/26/2006 12:00	61	30.19	1.5	5.0	12.8	30	0.1	0.1	0	
GMP-01A	Gas Monitoring Probe	1/26/2006 14:37	57	30.15	2.4	5.3	12.0	48	0.1	0.1	0	
GMP-07A	Gas Monitoring Probe	1/26/2006 9:07	56	30.21	6.8	10.8	8.9	136	0.1	0.1	0	
GMP-07A	Gas Monitoring Probe	1/26/2006 12:13	63	30.17	6.9	11.8	8.6	138	0.1	0.1	0	
GMP-07A	Gas Monitoring Probe	1/26/2006 14:48	55	30.17	12.3	13.5	6.9	246	0.1	0.1	0	
GMP-23	Gas Monitoring Probe	1/26/2006 14:09	57	30.17	0	14.8	0	0	0.1	0.1	0	
GMP-24	Gas Monitoring Probe	1/26/2006 14:14	60	30.16	0.5	11.7	0	10	0.1	0.1	0	

Legend:

%	percent by volume
°F	degrees Fahrenheit
CO_2	carbon dioxide
GEM-2000	CES-LANDTEC landfill gas meter
in. Hg	inches of mercury
in. H_20	inches of water
LEL	lower explosive limit
NA	not applicable
NMOC	non-methane organic compound
O_2	oxygen
PID	photoionization detector
ppm	parts per million
VOC	volatile organic compound

DEPARTMENT OF THE NAVY
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE WEST
1455 FRAZEE RD, SUITE 900
SAN DIEGO, CA 92108-4310

5090
Ser BPMOW.mrk/0095
3 Feb 2006

Mr. Gino Yekta
California Integrated Waste Management Board
1001 I Street
Sacramento, CA 95812-4025

Mr. Michael Wochnick
California Integrated Waste Management Board
1001 I Street
Sacramento, CA 95812-4025

Dear Mr. Wochnick and Mr. Yekta:

Following the procedures in the Hunters Point Shipyard Site 01/21 Final Interim Landfill Gas Monitoring and Control Plan (MCP), the purpose of this letter is to inform your agency that the two January 23, 2006 methane exceedances at Hunters Point Shipyard, have been reduced to less than 1% methane by volume for two consecutive days.

Between January 23 and January 31, Gas Monitoring Probes (GMPs) 01A and 07A ranged from 0.3 – 25.5% and 6.8 – 34.6% methane by volume, respectively, which exceeds the 5% methane by volume regulatory compliance limit. During this period, active gas extraction was performed at GMP01A and GMP07A. On February 1 and 2, additional extraction was performed from the gas control trench (PV02), resulting in decreases in methane levels at the GMPs. The most recent follow-up monitoring (February 2, 2006) indicates that methane levels for both GMP01A and GMP07A have dropped to 0.0%. We will continue monitoring on a weekly basis for the near future.

The trench is currently being properly vented using a portable extraction unit per the MCP

Enclosure (1) shows the location of the two GMPs with methane results for February 1-2. and enclosure (2) consists of the detailed monitoring logs for February 1-2, 2006.

Should you have any concerns with this matter, please contact Ms. Melanie Kito at (619) 532-0787.

Sincerely,

KEITH FORMAN
BRAC Environmental Coordinator
By direction of the Director

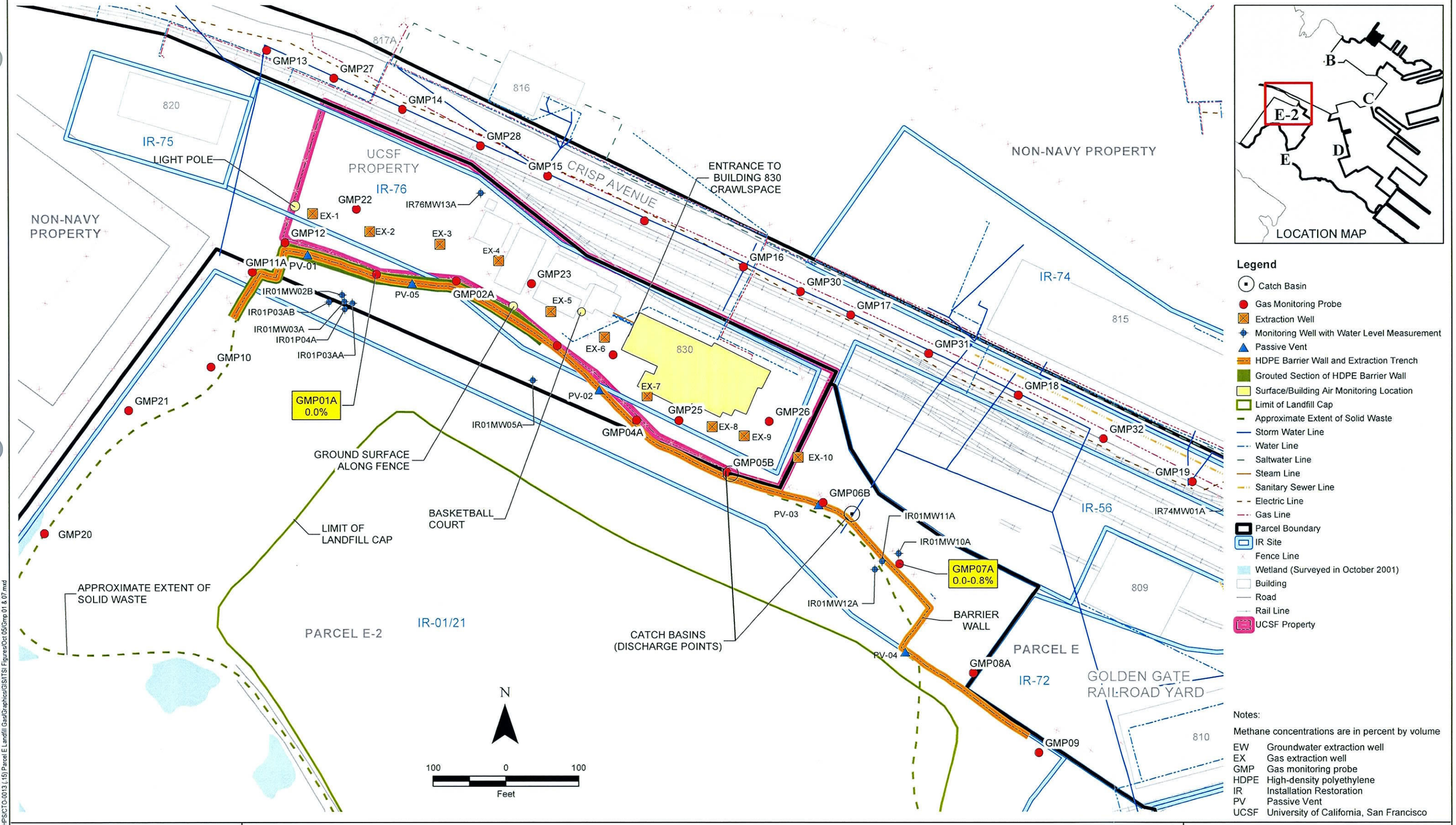
Enclosures: 1. Methane Concentrations at GMPs 01A and 07A; February 1-2, 2006.
2. Landfill Gas Monitoring Logs for February 1-2, 2006.

5090
Ser BPMOW.mrk/0095
3 Feb 2006

Copy to:
Mr. Michael Work (SFD 8-3)
U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901

Mr. Tom Lanphar
Department of Toxic Substances Control
700 Heinz Avenue, Bldg. F, Suite 200
Berkeley, CA 94710

Mr. Jim Ponton
California Regional Water Quality Control Board, San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612



Notes:

Methane concentrations are in percent by volume

EW	Groundwater extraction well
EX	Gas extraction well
GMP	Gas monitoring probe
HDPE	High-density polyethylene
IR	Installation Restoration
PV	Passive Vent
UCSF	University of California, San Francisco

2002\02-125 Navy HPS\CTO-0013 (-15) Parcel E Landfill Gas\Graphics\GIS\ITSI Figures\Oct 05\Gmp 01 & 07.mxd

ITSI Innovative Technical Solutions, Inc.

Monthly Landfill Gas Monitoring Report
Hunters Point Shipyard
San Francisco, California

Methane Concentrations at GMPs 01A and 07A
February 1-2, 2006

Landfill Gas Monitoring Log

Weather: Misting, cool

Name: B. Womack

Sampling Location					GEM-2000				PID			
Location ID	Description (for example, GMP, Well, Carbon, Hydrosil)	Date / Time of Measurement	Temp (°F)	Barometric Pressure (in. Hg)	Methane (%)	CO_2 (%)	O_2 (%)	Percent of LEL	Non-Methane VOCs (ppm)	Bckgrd. NMOCs (ppm)	Soil Gas Pressure (in. H_20)	Notes (e.g., active extraction location, flow rate, probe damage, instrument issues, etc.)
GMP-01A	Gas Monitoring Probe	2/1/2006 9:01	49	30.14	0	6.4	5.3	0	0.1	0.1	0	
GMP-01A	Gas Monitoring Probe	2/1/2006 15:03	56	30.07	0	6.4	5.5	0	0.1	0.1	0	
GMP-07A	Gas Monitoring Probe	2/1/2006 9:24	51	30.18	0.8	6.4	14.6	16	0.1	0.1	0	Actively extracting
GMP-07A	Gas Monitoring Probe	2/1/2006 15:13	54	30.08	0.6	5.5	15.9	12	0.1	0.1	0	Actively extracting
PV-02influent	Passive Sys. Influent	2/1/2006 9:05	50	30.18	5.6	10.1	12.4	112	0.1	0.1	NA	Actively extracting
PV-02influent	Passive Sys. Influent	2/1/2006 15:06	54	30.07	15.7	13.7	9.9	314	0.1	0.1	NA	Actively extracting

Legend:

%	percent by volume
°F	degrees Fahrenheit
CO_2	carbon dioxide
GEM-2000	CES-LANDTEC landfill gas meter
in. Hg	inches of mercury
in. H_20	inches of water
LEL	lower explosive limit
NA	not applicable
NMOC	non-methane organic compound
O_2	oxygen
PID	photoionization detector
ppm	parts per million
VOC	volatile organic compound

Landfill Gas Monitoring Log

Weather: Misting, cool; clearing and warmer by afternoon Name: B. Womack

Sampling Location		Date / Time of Measurement	Temp (°F)	Barometric Pressure (in. Hg)	GEM-2000				PID		Soil Gas Pressure (in. H_2O)	Notes (e.g., active extraction location, flow rate, probe damage, instrument issues, etc.)
Location ID	Description (for example, GMP, Well, Carbon, Hydrosil)				Methane (%)	CO_2 (%)	O_2 (%)	Percent of LEL	Non-Methane VOCs (ppm)	Bckgrd. NMOCs (ppm)		
GMP-01A	Gas Monitoring Probe	2/2/2006 8:07	56	30.13	0	2.7	14.1	0	0.1	0.1	0	
GMP-07A	Gas Monitoring Probe	2/2/2006 8:24	57	30.09	0	2.6	18.1	0	0.1	0.1	0	
GMP-01A	Gas Monitoring Probe	2/2/2006 14:18	60	30.07	0	4.3	5.6	0	0.1	0.1	0	
GMP-07A	Gas Monitoring Probe	2/2/2006 14:23	61	30.08	0	2.8	17.6	0	0.1	0.1	0	

Legend:

%	percent by volume
°F	degrees Fahrenheit
CO_2	carbon dioxide
GEM-2000	CES-LANDTEC landfill gas meter
in. Hg	inches of mercury
in. H_20	inches of water
LEL	lower explosive limit
NA	not applicable
NMOC	non-methane organic compound
O_2	oxygen
PID	photoionization detector
ppm	parts per million
VOC	volatile organic compound